

Project Manual

RIVERFRONT PARK

City of **Mount**

P.O. Box 809

Vernon, Washington 98273

SB
483
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S93
1988

RD HAAG ASSOCIATES, INC.
PE ARCHITECTS • SITE PLANNERS
1215 1ST AVE. SEATTLE, WASHINGTON

98102

City of



Planning and Building Department

P.O. Box 809, Mount Vernon, WA 98273
(206) 336-6214

July 28, 1988

Mr. Steve Craig
Shorelines Program
Department of Ecology
Mail Stop PV-11
Olympia, WA 98504

Dear Mr. Craig:

Enclosed are five copies of the master plan and construction plans and specifications for the proposed riverfront park in Mount Vernon. This project has been very enjoyable because it enabled me to work with one of this country's most renowned landscape architects, Richard Haag. Mr. Haag brought a unique perspective to this project - working with the river and the values of the community while being aware of limited funding for future development.

Mr. Haag has worked with the agencies that have jurisdiction over the development of this park. To date, the Federal Emergency Management Administration has reviewed this plan and given their preliminary approval (copy of their letter is enclosed). Personnel from the State Department of Fisheries have also reviewed the site and the plan. They have indicated a willingness to seek funding through the state legislature to provide access to the sand bar along the property and also to help with the paving of the parking lot. One of our state legislators has also reviewed the site and plan and has asked us to testify in the legislature next year to ensure continued funding for parks such as this.

By holding public meetings and seeking public input, I feel that the City of Mount Vernon has stimulated interest in the balance of the riverfront. As a result, we now have a "Riverfront Revitalization Study" underway. Sponsored by the Downtown Merchants Association, this project will tie the park into other uses of the river. As a result, more emphasis has been placed on making the Skagit River a better-utilized asset.

Mr. Steve Craig

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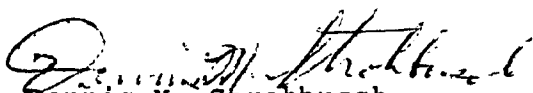
July 28, 1988

During the course of this project, it became apparent that the initial budget established in the contract was in need of revision. First, we had anticipated that outside engineering assistance would be needed. However, personnel changes in the consultant's office negated this need. A new person with an engineering background was hired who was able to work with the various regulatory agencies. The primary concern was conveyance of storm water, but meeting other items of interest was also important. Second, the amount of money set aside for supplies, travel, printing/copying, and indirect costs were either not needed or were paid to the consultant.

Mr. Haag's total amount billed was \$19,255.74. The amount over the contract of \$18,000 for design services was for the reimbursable items listed above. Finally, the amount of in-kind services was increased due to using the City Engineering Department to review the plans generated by the consultant. These changes are consistent with the intent of the contract budget and have enabled us to obtain a set of plans that have been fully reviewed at the local level.

Thank you for your assistance in this project. Your help during this process was much appreciated. I believe that your cooperation is the kind that really helps small communities such as Mount Vernon accomplish projects that are normally beyond their reach. Again, thank you, and I hope that we can work together again in the future.

Sincerely,


Dennis M. Strohbusch
Planning Director

YP

Enclosures

PROJECT COMPLETION REPORT
RIVERFRONT PARK PLANNING PROJECT
CITY OF MOUNT VERNON

Summary Account

The City of Mount Vernon purchased a twelve acre parcel of land along the Skagit River in 1986. The purpose of the land purchase was to use the property for a park. This would be a logical extension of Lion's Park to the south of the newly purchased property. This property had been considered for park purposes for some time. In 1976, the City and the property owner attempted a land swap. This was almost consummated except that the City was bound by deed provisions not to sell or trade its portion. Other attempts were made by various service clubs to obtain the land by donation or reduced purchase price for several years after that.

The property has a history of use for commercial purposes in the past as a log dump, an oyster shell company, and an access point for an automobile wrecking yard to the west. The property has high visibility from Interstate 5 and is located along a highly traveled local arterial street, Freeway Drive. Its location is close to the Central Business District, yet it is between that area of the community and the later developing "mall" area. Because of this location and commercial zoning on a portion of the property, a private party purchased the land in 1985 with the intended purpose of constructing a motel on the site. Because of its location on the inside of the dike (which is considered the floodway in Mount Vernon), there was considerable doubt whether the owner could pursue his planned use. After considerable discussions, the City was able to enter into a three way land swap which enabled it to obtain ownership of this parcel.

The attractiveness of this site for park purposes cannot be overstated. Approximately 90% of Mount Vernon's residents live to the east of the site. At present, the only easily accessible park that has access to the river is Lion's Park, which is directly to the south. This one acre park is immensely popular, particularly in the summer. Its 35 car parking lot is usually filled during the day, and many people from the Central Business District walk there to have lunch. This popularity comes despite many drawbacks, such as constant noise from the freeway, the lack of mature landscaping, and a parking lot that is inadequate to handle the demand.

The new park site is large enough to overcome these problems. It is large enough to have the amenities desired by residents and travelers alike. The twelve acres are sufficient to provide adequate parking, amenities, views of the river, and natural areas. However, the site required a sensitivity to these needs as well responding to the constraints of the property. These include the fact that it is in the floodway and has regular flooding annually. There are dikes on the north and east sides of the property that must be retained and protected yet made an attractive part of the park. Finally, the fact that it is in the floodway makes difficult the placement of "normal" park amenities, such as convenient restrooms, picnic shelters, etc.

It was decided that the services of a landscape architect were needed if a park were to be designed that would meet these needs. The City of Mount Vernon first obtained approval of this grant request. Shortly thereafter, the City sought the services of qualified design firms. Several firms submitted their qualifications, and two were chosen for interviews. A committee made up of three City Council members held the interviews. It became apparent that the firm of Richard Haag Associates (RHA) was the most qualified for this project. With Department of Ecology concurrence, this firm was hired for this project.

The first phase of work was a master plan for the proposed park. RHA prepared a draft plan in October 1987. The City's Community Development and Parks Committee reviewed this plan in November 1987. In February 1988, a final draft plan was prepared by RHA and presented to the Committee. At that time, the Committee concurred with the draft plan and recommended that a public hearing be held. In April 1988, that public hearing was held. After consideration of the plan, the full City Council approved the master plan and authorized RHA to proceed with construction plans.

Those plans have also been completed by RHA. The City of Mount Vernon will now attempt to obtain additional funding sources to construct this park. The commitment by the City of Mount Vernon on this project has already had an impact on the community. The Mount Vernon Downtown Merchants Association has become aware of the potential of the Skagit River and is working on a program to revitalize the riverfront area. The park plan has been a catalyst to that effort. This project has been very successful, not only in completing plans for a major park in Mount Vernon but also in focusing attention to the Skagit River.

Exhibits

RHA has prepared the following as the final product of this project:

1. Construction Plans. These consist of five sheets (24 x 36 inches in size) of plans necessary for the actual construction of the park, including grading and drainage, layout, planting, lighting, irrigation, etc.
2. Construction Specifications. This is a booklet containing all bid specifications that would be necessary to guide the construction of this project. The booklet is designed to be used as part of the bidding process for this project.

Specifications
for Construction of

MOUNT VERNON
RIVERFRONT PARK

The preparation of this report was financially aided through a grant from the Washington State Department of Ecology with funds obtained from the National Oceanic and Atmospheric Administration, and appropriated for Section 306 of the Coastal Zone Management Act of 1972.

Prepared by

RICHARD HAAG ASSOCIATES, INC.
2923 Fuhrman Avenue East
Seattle, Washington 98102
206/322-3290

Date of Issue:
June 30, 1988

RIVERFRONT PARK
June 30, 1988

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GENERAL CONDITIONS
00700 Page 1

The American Institute of Architects AIA Document A 201, current edition, is hereby made a part of these specifications. Copies may be obtained at the offices of the Seattle Chapter of the American Institute of Architects, 1911 First Avenue, Seattle, WA 98101; or from the American Institute of Architects, 1735 New York Avenue, N.W., Washington D.C., 20006.

END, SECTION 00700

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SUPPLEMENTARY CONDITIONS
00800 Page 1

PART 1 - GENERAL

1.01 GENERAL CONDITIONS OF THE CONTRACT

- A. Standard Form: "General Conditions of the Contract for Construction," A.I.A. Document A201, is a part of these specifications.
- B. Conflict: In case of conflict between these General Conditions and the specifications, the specifications govern.

1.02 MODIFICATIONS OF THE GENERAL CONDITIONS

The following modifications to the General Conditions add to or, supersede applicable articles and paragraphs of the standard form.

1.03 ARTICLE 3, OWNER

The Owner is the City of Mount Vernon, Washington.

1.04 ARTICLE 4, CONTRACTOR

Paragraph 4.2: Add the following subparagraphs: "4.2.2 The Contractor shall examine the premises and conditions of the site affecting the work and shall compare them to conditions as represented in the contract documents. Should conflict or inconsistencies between the actual conditions and the Contract Documents be noted, the Contractor shall notify the Owner and await his direction."

"4.2.3. If work is required in manner to make it impossible to produce first-class work, or should discrepancies appear among Contract Documents, the Contractor shall request the Owner's interpretation before proceeding with work. If the Contractor fails to make such request, no excuse will thereafter be entertained for failure to carry out work in satisfactory manner."

- B. Paragraph 4.3.1. Change to read:

"The Contractor shall supervise and direct the work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences, safety, and procedures and for coordination of all portions of the Work under the contract. He shall review with all subcontractors methods and materials to be used, to verify their compliance with all safety standards and laws and be responsible for compliance with same, to insure safe, hazard-free conditions for all persons visiting or working on the entire project."

1.05 ARTICLE 8, TIME

Paragraph 8.1.3: Add the following:

"The Owner reserves the right to use or to occupy the project or any part thereof, or to use the equipment installed under the contract, prior to final payment and acceptance of the work or any part thereof. Such use shall not negate or change the responsibility of the Contractor to the Owner for a satisfactory completion of the work, nor shall it negate any insurance provisions specified to be carried in full force until the time of acceptance.

1.06 ARTICLE 9, PAYMENTS & COMPLETION

A. Paragraph 9.3.2: Add the following:

"The Contractor shall secure from his subcontractors accurate certified schedules of values for their work for the Owner's approval.

B. Paragraph 9.6.1: Add the following:

".8 failure to present affidavit pertaining to payment of subcontractors"

1.07 ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

Paragraph 10.1.1: Add the following:

"Safety: The Contractor shall be solely and completely responsible for the conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.

The required and/or implied duty of the Owner or his representatives to conduct construction review of the Contractor's performance does not, and is not intended to, include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site."

1.08 ARTICLE 14, TERMINATION OF THE CONTRACT

A. Paragraph 14.2.1: Add the following:

"The Owner may of his option, with such written notice to the Surety and without any written notice to the Contractor transfer the employment for said work from the Contractor to the Surety. Upon receipt of such notice, such surety shall enter upon the premises without delay and take possession of all materials, tools and appliances thereon for the purpose for the purpose of completing the work includes under this contract and employ by contract or otherwise any person or persons to finish the work and provide the material therefor, without termination of the continuing full force and effect of this contract.

B. Paragraph 14.2.2: Add the following:

"In the event of termination of the Contract because of Contractor's failure to carry out the work, the Contractor's failure to carry out the work, the Contractor shall have no claim against the Owner for Profits or damage.

END, SECTION 00800

PART 1 - GENERAL

1.01 WORK UNDER THIS CONTRACT

Provide materials, equipment, labor, and supervision necessary to accomplish the Work described by the Contract Documents, except those things specifically noted as provided by others or as not included in contract. In general, the Work includes, but is not limited to, the following major items of work:

- A. Rough and fine grading of site including excavation and backfilling of site utilities.
- B. Construction of asphalt parking lot and paths.
- C. Construction of storm drainage and culvert.
- D. Construction of cast in place concrete stairs and cheek walls.
- E. Planting of trees and lawn including amending existing soil, providing new planting soil, fertilizers, etc.
- F. Construction of automatic irrigation system.
- G. Construction of sand beach.
- H. Construction of children's play area with timber edged sand pit.

1.02 WORK BY OTHERS AND ITEMS FURNISHED BY OWNER

- A. A number of work activities within and adjacent to the project limits (of Construction Activity) will have to be performed by others, including but not limited to:
 - 1. City of Mount Vernon will extend existing storm drainage discharge structure at proposed beach area.
 - 2. Water meter for irrigation system will be provided and installed per Skagit P.U.D.
 - 3. Electrical hook-up from adjacent utility line for parking lot lighting and irrigation system will be provided. Contractor will be responsible for electrical connection from provided hook-up to parking lot lights and irrigation controller.
- B. Cooperate and coordinate with work forces responsible for above items. Costs incurred by Contractor in planning, scheduling, and coordinating with these entities shall be included in the Basic Bid as incidental to the project. Every effort will be made by the Owner to provide the above items prior to this Agreement's Work.

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SUMMARY OF WORK
01010 Page 2

1.03 USE OF PREMISES

The Contractor shall confine his equipment, storage of materials, and demolition work operations to the limits prescribed by ordinances or permits or as may be directed by the Owner, and shall not unreasonably encumber the premises.

1.04 PROTECTION OF PERSONS AND PROPERTY

Protect neighboring property, visitors, park users, and passers-by from injury and discomfort, including dust.

1.05 DEBRIS AND EXCESS MATERIAL

Maintain project site free of accumulations of debris and excess materials. Haul away and dispose of any materials not required on site and not designated for Owner's retention.

1.06 ARCHAEOLOGICAL FINDINGS

There are no known archaeological remains in the immediate work area. Should any skeletons, artifacts, or other archaeological remains be uncovered, Contractor shall suspend operations at the site of discovery; notify Owner immediately of the findings; and continue operations in other areas. Included with the notification shall be a brief statement of the location and details of the findings.

END SECTION 01010

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COORDINATION
01040 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

The Contractor is responsible for overall coordination of the project. Coordinate schedules of all subcontractors. Verify timely deliveries of products for installation by other trades. Verify that labor and equipment are adequate for work and schedule. Verify that material deliveries are adequate to maintain schedule. Cooperation among the various subcontractors shall be required for proper execution of the work.

END SECTION 01040

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GRADES, LINES, AND LEVELS
01051 Page 1

PART 1 - GENERAL

1.01 SITE LAYOUT

The Contractor shall accurately lay out the work from monuments and control points indicated on the drawings and established in the field. Carefully and precisely preserve existing control points, and establish additional lines and levels required for location of all the Work. Final layout of structures must be approved by Owner. Maintain control points within the project boundaries throughout the project, and make them accessible and identifiable to the Owner, and all connected with the Work. Replace any disturbed or destroyed points as directed. Employ a competent surveyor, licensed in the State of Washington, to lay out the work and be responsible for its accuracy.

END SECTION 01051

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SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
01340 Page 1

PART 1 - GENERAL

1.01 REQUIREMENTS AND WORK SPECIFIED ELSEWHERE

Provisions of the Bidding Requirements and Conditions of the Contract apply to all Sections of Specifications. Refer to indicated Sections for the following related items:

01400 Quality Control
01700 Contract Closeout

1.02 GENERAL

Prepare and submit in accordance with the requirements of this Section, except as amplified and modified in other sections of these Specifications, all submittals called for in Contract Documents or otherwise required including schedules, lists, receipts, drawings, materials, manuals, reports, certificates, affidavits, notices, guarantees, etc. Request for payment will not be approved prior to receipt and approval of specified and required submittals for portions of Work affected.

1.03 COORDINATION OF SUBMITTALS

Prior to each submittal, carefully review and coordinate all aspects of each item being submitted and verify that each item and the submittal for it conforms in all respects with the requirements of the Documents. Verify critical dimensions by checking against field conditions and incorporate into Drawings. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

1.04 Submittals which are related to or which affect each other shall be submitted simultaneously.

1.05 IDENTIFICATION OF SUBMITTALS

Identify each submittal, refer to relevant specification section number, and clearly define the locations of installation of the submitted work.

1.06 TIMING OF SUBMITTALS

A. General

Make all submittals far enough in advance of installation to provide all time required for reviews, for securing necessary approvals, for possible revisions and resubmittals, and for placing orders and securing delivery.

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SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
01340 Page 2

B. Owner's Review Time

In scheduling, allow at least 14 calendar days for review by the Owner following his receipt of the submittal.

C. Delays

Delays caused by tardiness in receipt of submittals will not be an acceptable basis for extension of the Contract completion date.

1.07 TRANSMITTAL PROCEDURE

Transmit all specified and required submittals to Owner. Accompany all submittals with a letter of transmittal including transmitter's name and address, project title, telephone number and description of items included, and other pertinent data.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS AND COORDINATION DRAWINGS

A. Scale and Measurements

Make Final Design Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

B. Type of Prints Required

Submit all Shop Drawings in the form of one sepia transparency of each sheet plus one blue line or black line print of each sheet.

C. Reproduction of Review Shop Drawings

Printing and distribution of review Shop Drawings for the Owner's use will be by the Owner. All review comments of the Owner will be shown on the sepia transparency when it is returned to the Contractor. The Contractor shall make and distribute all copies required for his purposes.

2.02 MANUFACTURERS' LITERATURE

A. General

Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly indicate which portion of the contents is being submitted for review.

B. Number of Copies Required

Submit the number of copies which are required to be returned plus two copies which will be retained by the Owner.

2.03 SAMPLES

A. Accuracy of Samples

Samples shall be of the precise articles proposed to be furnished.

B. Number of Samples Required

Unless otherwise specified, submit all samples in the quantity which is required to be returned plus one which will be retained by the Owner.

C. Reuse of Samples

In situations specifically so approved by the Owner, the Owner's retained Sample may be used in the construction as one of the installed items.

2.04 COLORS AND PATTERNS

Unless the precise color and pattern is specifically described in the Contract Documents, and whenever a choice of color or pattern is available in a specified product, submit accurate color and pattern charts to the Owner for review and selection.

3.01 OWNER'S REVIEW

A. General

The Owner's review and approval does not relieve the Contractor from his responsibility for compliance with the Contract Documents. Such review and approval indicates that the general method of construction and detailing is satisfactory in regards to the Conformance with Contract Documents. Approval does not imply that the Owner has checked for quantities, space requirements, Coordination with other trades, infringement of patents, etc.

B. Authority to Proceed

The notations "Reviewed, and approved, no exceptions noted" or "Reviewed, approved, exceptions noted" authorize the Contractor to proceed with fabrication, purchase, or both, of the items so noted, subject to the revisions, if any, required by the Owner's review comments.

C. Revisions

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SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
01340 Page 4

Make all revisions required by the Owner. If the Contractor considers any required revision to be a change, he shall so notify the Architect as provided in the General Conditions. Show each drawing revision by number, date, and subject in a revision block on the drawing. Make only those revisions directed or approved by the Owner.

END, SECTION 01340

RIVERFRONT PARK
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SCHEDULE OF VALUES
01370 Page 1

PART 1 - GENERAL

1.01 GENERAL

Submit a Schedule of Values prepared in the form of submittal specified herein and any supportive data substantiating its correctness as the Owner may require. Submit for approval and incorporation into applications for Payment and Construction Schedule as applicable.

1.02 TIME OF SUBMITTAL

Submit Schedule of Values within ten (10) days after Notice to Proceed for Owner's review and approval.

1.03 FORM OF SUBMITTAL

A. Schedule Requirements

Submit schedules on 8 1/2 X 11 inch paper. Use Table of Contents , as applicable, as basis for listing costs of each major item of work and each subcontracted item of work for sections under Divisions 1-16. Identify each line item with section number and title. Include proper share of overhead and profit with each line item. Make the sum equal to total Contract Sum.

B. Partial Sample Schedule for General Work

- | | |
|--------------------------------------|---------|
| 1. Bonds, Insurance, Permits, etc. | \$_____ |
| 2. Field Supervision and Layout | _____ |
| 3. Temporary Facilities and Controls | _____ |
| 4. Misc. General Requirements | _____ |
| 5. | _____ |

C. Partial sample for Site Work

- | | |
|----------------------------|-------|
| 1. 02100 Site Preparation | _____ |
| 2. 02200 Earthwork | _____ |
| 3. 02434 Culverts | _____ |
| 4. 02480 Landscaping | _____ |
| 5. 02487 Hydroseeding | _____ |
| 6. 02750 Irrigation System | _____ |

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SCHEDULE OF VALUES
01370 Page 2

D. Partial Sample Schedule for Concrete

1.	03100 Concrete Formwork	\$ _____
2.	03200 Concrete Reinforcement	_____
3.	03300 Cast in Place Concrete	_____
4.	_____

1.05 USE OF SCHEDULE OF VALUES

Resubmit Schedule of Values showing amounts of work completed in each category, at time of submission of each Payment Request. Make additions on Schedule of Values to show Change Orders and any Modifications of the Contract Amount.

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QUALITY CONTROL
01400 Page 1

PART 1 - GENERAL

1.01 RELATED WORK DESCRIBED ELSEWHERE

Particular requirements for quality control of products and processes may be given in the relevant specification section.

PART 2 - PRODUCTS

2.01 SUITABILITY TO PURPOSE

The Owner may reject any items which are not suitable and adequate for their intended purpose, except where such items are provided in strict accordance with detailed specifications, or approved drawings and design.

2.02 DEFECTIVE MATERIALS OR PRODUCTS

Reject, or replace, if necessary, any product which is defective in manufacture or which fails to function in accordance with descriptions and specifications provided or referenced by supplier or manufacturer. Arrange for and bear the cost of removing and returning any defective item, and the cost of making claim to the supplier. Make any necessary replacements or adjustments to other work occasioned by the removal of unsuitable or defective products.

2.03 CONSISTENT MATERIALS

Provide new, whole materials, the best of their respective kinds, for every application not otherwise specified. Avoid joints and splices where full-size materials are available. Provide all of the material for any application from a single source, dye-lot, mill run or batch. Inspect and match materials. Select lumber pieces from available stock to best suit intended application and appearance.

2.04 WORK CONTRARY TO RECOMMENDATIONS

In the event the use of any specified product appears to be contrary to manufacturer's recommendations or to the characteristics of the product, immediately notify the Owner and await instructions before proceeding.

2.05 HANDLING AND STORAGE

Handle every material and product so as to protect its quality. Do not deliver materials to site until they are needed for installation. Store materials off the ground and under cover where not intended for exterior use.

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QUALITY CONTROL
01400 Page 2

PART 3 - EXECUTION

3.01 QUALIFIED WORKERS

Each part of the Work shall be performed under the direction of an experienced foreman with responsibility for the results. Apprentice workers shall not be left undirected on the job.

3.02 MANUFACTURER'S INSTRUCTIONS

In the event of unusual or complex application of any product, secure the specific direction of the manufacturer's representative, and install the product in such a way as to secure the manufacturer's warranty of performance.

3.03 TRADE STANDARDS

Where recognized trade associations have established specifications or standards for the performance of work in their field, adhere to such requirements, Specifications or trade standards shall be recognized as minimum standard of quality.

END, SECTION 01400

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TEMPORARY FACILITIES AND CONTROLS
01500 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Temporary facilities and controls required for this Work include, but are not necessarily limited to:

1. Field offices and sheds.
2. Temporary utilities such as water, electricity, and telephone.
3. Sanitary facilities.
4. Enclosures such as barricades.
5. Temporary Fencing.
6. Temporary site drainage and erosion control.

B. Related Work Described Elsewhere

1. Except that equipment furnished by subcontractors shall comply with requirements of pertinent safety regulations, the ladders, planks, hoists, and similar items normally furnished by the individual trades in execution of their own portions of the Work are not part of this Section.
2. Permanent installation and hook-up of the various utility lines are described in other pertinent Sections of these Specifications.

1.02 MAINTAINING TEMPORARY FACILITIES

Use all means necessary to maintain temporary facilities and controls in proper and safe condition throughout progress of the work.

1.03 JOB CONDITIONS

Make all required connections to existing utility systems with minimum disruption to services in the existing utility systems. When disruption of the existing service is required, do not proceed without the Owner's approval and, when required, provide alternate temporary service.

PART 2 - PRODUCTS

2.01 FIELD OFFICES AND SHEDS

A. Contractor's Facilities

1. Field office building and sheds in size and accommodation for all Contractor's offices, supply and storage is not required and will be Contractor's option.
2. The entire facility, including furniture, if provided, will remain the property of the Contractor and shall be removed from site on completion of the Work.
3. Sanitary facilities: Provide temporary sanitary facilities in the quantity required, for use of all personnel connected with the Work. Maintain in a sanitary condition at all times.

2.02 UTILITIES

A. General

Temporary facilities shall be subject to Owner's approval.

B. Water

1. Water meter shall be provided by Owner prior to Work of this Contract. Make arrangements for connection to water system.
2. Provide and pay for water needed for the Work on this Contract.

C. Electricity

1. Electrical hook-up from surrounding utility line will be provided by Owner prior to Work on this Contract.
2. Make arrangements for connection to provided hook-up. Provide and pay for temporary power and light service necessary for conduct of the Work. Upon completion, remove such temporary facilities.

D. Telephone

Make arrangements and pay costs for installation and operation of telephone service to Contractor's office if agreed necessary.

E. Drainage

1. Provide for the flow of water courses - including streams, ditches, drains, and combined sewers - intercepted during the progress of work and restore the same in as good condition as found, or make

such final provisions for them as the Owner may direct.

2. Provide for the free passage of surface water.
3. Handle surplus water, mud, silt, slickings, or other runoff pumped from excavations or other operations to prevent damage, of whatever nature, resulting from inadequate control of runoff.
4. Attention is called to the requirements of the Environmental Protection Agency, the Washington State Department of Ecology, and to the requirements of the Local Health Department, concerning control of sediment surface water flows during and after construction. Contractor is responsible for compliance with these requirements and for preparing any required submissions dealing with temporary water and erosion control.

2.03 ENCLOSURES

Furnish, install, and maintain for the duration of construction required, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary construction necessary for proper completion of the Work, protection of workmen and visitors and containment of dust, in compliance with regulations.

2.04 DUST, MUD AND VAPOR CONTROL

- A. Protect workmen, the Owner's employees and the public from discomfort of injury from dust arising from construction operations. Completely contain any hazardous vapor or dust (such as fibrous particulate, petroleum distillates, ketones). Water to quell dust.
- B. Complaints on dust, mud or unsafe practices and/or property damage to private ownership will be transmitted to the Contractor and prompt action in correction will be required. Written notice of correction of complaint items will be called for, should repetitive complaints be received by the City.
- C. The Contractor shall be responsible for controlling dust and mud within the project limits and on any street which is utilized by his equipment for the duration of the project. The Contractor shall be prepared to use watering trucks, power sweepers and other pieces of equipment as deemed necessary by the Owner, to avoid creating a nuisance.

2.05 NOISE CONTROL

Any operation producing noise in excess of 86 db as measured at a distance of 50 feet is prohibited unless agreed upon in writing with the Owner. Blasting, and similar concussive noises are prohibited except by

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TEMPORARY FACILITIES AND CONTROLS
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prior agreement in writing.

2.06 PARKING

Parking of all construction equipment, contractors' vehicles and employees' vehicles is limited to the construction site except by special written agreement.

2.07 PROJECT SIGNS

Limitation of signs. Allow no signs or advertising of any kind on the job site except as specifically approved in advance by the Owner.

2.08 TEMPORARY FENCING

- A. Furnish and install temporary fencing as described in Section 02100 - SITE PREPARATION.

PART 3 - EXECUTION

3.01 MAINTENANCE AND REMOVAL

Maintain temporary facilities and controls as long as needed for the safe and proper completion of the Work. Remove all such temporary facilities and controls as rapidly as progress of the Work will permit, or as directed by the Owner.

3.02 SECURITY

The Owner does not assume any responsibility, at any time, for the security of the site from the time the Contractor's operations have commenced until Final Acceptance of the Work by the Owner. The Contractor shall employ such measures as additional fencing, barricades and watchman service, as he deems necessary for public safety and for the protection of the site and his plant and equipment.

END, SECTION 01500

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CONTRACT CLOSEOUT
01700 Page 1

PART 1 - GENERAL

1.01 GUARANTEE

- A. In addition to guarantees required by General Conditions, the Contractor shall furnish written guarantees warranting materials and workmanship for 1 year, except where longer guarantees are specified in the Technical Sections of these Specifications. Such written guarantees are in addition to previous required guarantees and shall be addressed to the Owner and submitted on the Contractor's own letterhead before final payment and acceptance of the project. Also submit manufacturer's standard warranties, guarantees and affidavits called for in specifications. The general format of the guarantees shall be as follows:

Owner: _____

Project: _____

Landscape Architect: _____

Reference: (Technical specification section No.)

Address to the Owner: _____

(I), (We), (General Contractor), certify that the _____

(subject of guarantee)

work installed by the (Subcontractor) at your new park located at (street address) has been performed in full accordance with plans, specifications, and General Conditions.

Further that we guarantee this work to be free from defects in workmanship or material for a period of one (1) year, unless otherwise noted, from date of final acceptance, and that upon notification, we will make good without delay, any defects without additional cost to the Owner at the convenience of the Owner.

Yours very truly,

CONTRACTOR: _____ DATE: _____

BY: _____
(signed-authorized signature of firm) (printed)

SUBCONTRACTOR: _____ DATE: _____

BY: _____ DATE: _____
(signed-authorized signature of firm) (printed)

1.02 OPERATIONS AND MAINTENANCE DATA

A. Operation and Maintenance Manuals

Provide Manufacturer's recommended instructions for installation, operation, maintenance and repair for all materials and equipment that requires any special attention for its proper installation necessary for Owner to operate and make full and efficient use of equipment, and perform such maintenance and servicing as would ordinarily be done by Owner's personnel.

Point out possible hazards with instructions cautioning against mistakes in maintenance and operation that might result in damage or danger to the equipment, property, or personnel.

B. Demonstrations and Operating Instructions

Furnish competent personnel to instruct the Owner or his designated representative in the use, operation and maintenance of equipment and materials as required by the technical specifications. Notify Owner at least 48 hours prior to scheduled time.

C. Submittals

1. Timing

Submit manuals and written confirmations not later than ten (10) days prior to final payment and completion.

2. Maintenance Manuals

Except as otherwise indicated, manuals shall be in triplicate, 8 1/2 inches by 11 inches size or multiple accordation folds, in hard cover binders, bound and indexed form, all property identified by specification section numbers, project name and Contractor and Subcontractor' names.

3. Demonstrations and operating instructions confirmation

Written confirmation signed by Owner's representative including dates, duration of time, parties present, project name and Contractor or Subcontractor's name.

1.03 CLEANING UP

Cleaning storage and shop areas

When any portion, of the project site is used as a storage or shop area,

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CONTRACT CLOSEOUT
01700 Page 3

the Contractor or trade making use of such area is responsible for any repairs, patching or cleaning arising from such use.

1.04 PROJECT RECORD DOCUMENTS (AS-BUILT DRAWINGS)

A. General

Maintain and submit project record documents as specified and required by General Conditions except otherwise noted.

B. Maintenance of documents

Maintain at job site one copy of Contract Drawings, Project Manual, Addenda, Reviewed Shop Drawings, Change Orders and other modifications to Contract, and Field Test Records, stored apart from documents used for construction. File documents in accordance with Project Manual Section numbers. Make documents available at all times for inspection by Owner.

C. Marking Devices

Use red pencil for marking.

D. Recording

Keep record documents current. Do not permanently conceal any work until required information has been recorded.

E. Contract Drawings

Legibly mark to record actual construction including depths of foundations, horizontal and vertical location of underground utilities and appurtenances, referenced to permanent surface improvements; location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure field changes of dimension and detail and changes by Field Order or Change Order.

F. Specifications

Mark legibly in each Section to record all Addenda, Change Orders, Field Orders and the Supplier, Manufacturer and trade name of each product and item of equipment actually installed.

G. Submittal

Submit project Record Documents not later than ten (10) days prior to final payment and completion.

1.05 PUNCH LIST

The Owner will conduct a punchlist inspection upon notice of Substantial Completion and prepare a punchlist for Contractor's use. The punchlist will be tabulated list of materials and items that do not conform to the Contract Documents. The Contractor shall complete the items listed and all subsequent items, added in a timely manner until the project is accepted.

1.06 SUBSTANTIAL COMPLETION

The Owner will issue a Certificate of Substantial Completion when satisfied that all conditions for substantial completion have been met. When approved by Owner and Contractor, the certificate establishes the Date of Substantial Completion.

1.07 FINAL INSPECTION

The Owner will conduct a final inspection with Owner and Contractor representatives present, after receipt of a Project Completion Notice. If the Owner finds five (5) uncorrected punchlist items, he will abandon the final inspection and the Contractor shall be required to complete work and resubmit a new Project Completion Notice.

1.08 FINAL ACCEPTANCE, PAYMENT AND RELEASE OF RETENTION

Final acceptance, final Certificate for Payment, and Release of Retention shall be granted when the Owner is fully satisfied that all requirements of the Contract Documents have been fulfilled. Final Acceptance, payment and release of retention will be made by Owner.

1.09 CORRECTION OF WORK DURING GUARANTEE PERIOD

A. Corrections

Where items on the Owner's "Punch List" have not been corrected prior to expiration of the specified guarantee period, it shall nevertheless be the responsibility of the Contractor to permanently correct said items after the specified guarantee period, and the contract shall not be fully performed until such permanent corrections are made.

B. Guarantee Period

All corrective work performed by the Contractor in remedying defective work during the guarantee period following the Owner's acceptance of the project shall be subject to the same guarantee requirements of the original work for a period as specified from the date of completion of the corrective work.

END, SECTION 01700

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SITE PREPARATION
02100 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included
Protection of vegetation to remain
Clearing and grubbing
Topsoil stripping and stockpiling
- B. Related Work Described Elsewhere
02200 Earthwork

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Tree Protection Fence
Temporary fence for protection of vegetation to remain shall be five feet high minimum chain link fence. Metal support stakes shall be at least eighteen inches longer than fence height.

PART 3 - EXECUTION

3.01 PROTECTION OF TREES TO REMAIN

- A. After grade stakes have been set, Owner shall identify existing trees and other vegetation to remain.
- B. Tree protection fencing shall be installed prior to initiating clearing/grubbing and topsoil stripping operations. Contractor shall install tree protection fence at the drip line of trees to remain and at the perimeter of plant masses to remain. Stakes shall be installed to eighteen inch minimum depth and spaced at twelve feet maximum or as necessary to provide stability. Contractor shall not park any vehicles or equipment, nor store any materials within any area enclosed by tree protection fencing.

3.02 CLEARING AND GRUBBING

- A. Contractor shall remove all plants not designated to remain by Owner. Grub out tree roots to a depth of at least eighteen inches below finish grade. Sod, groundcover, and shrubs shall be stripped to the depth below existing grade required for complete removal. All cleared organic debris shall be properly disposed of offsite or burned on site in a location identified by the Owner. Contractor is responsible for obtaining and paying for all required burning permits and approvals.
- B. Rocks or concrete pieces two inches or more in diameter shall be removed from the site or placed in fill zones at a depth of eighteen inches

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SITE PREPARATION
02100 Page 2

minimum below finish grade. Extremely large rocks, three feet or more in diameter, shall be stockpiled for possible use in the children's play area. Rocks not so used shall be disposed of by the procedures described for two-inch+ diameter rock.

3.03 TOPSOIL STRIPPING AND STOCKPILING

- A. After vegetation has been removed strip topsoil to a depth of twelve inches below existing grade and place in a stockpile location identified by the Owner. After rough grading operations this material will be amended and spread on site to provide seed bed for lawn grasses.

END SECTION 02100

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EARTHWORK
02200 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included
 - Rough Grading
 - Finish Grading
 - Trenching, Backfilling and Compacting
 - Crushed Rock Pavement Base
 - Sand for Beach, Play Area, and Base for Concrete Stairs
 - Erosion Control
- B. Related Work Described Elsewhere
 - 01051 Grades, Lines, Levels
 - 02434 Culverts
 - 02441 Irrigation System
 - 02513 Asphaltic Concrete Paving
 - 02721 Storm Sewer System
 - 02480 Landscaping
 - 03300 Cast-in-Place Concrete

1.02 QUALITY ASSURANCE

- A. Tests and Inspections
 - 1. Owner will provide testing laboratory to conduct field inspection and material testing for soil bearing quality control in specified areas.
 - 2. Tests will include inspection of cleared areas prior to placing compacted fill and compaction tests to determine compliance with specification requirements.
- B. Standards
 - The "Standard Specification for Municipal Public Works Construction", published by the Washington State Chapter, American Public Works Association (APWA), latest edition, shall apply unless modified herein.
- C. Tolerances
 - 1. All grading of earth described in this section shall be constructed within a tolerance of plus or minus one tenth (1/10) foot maximum variation from the grades shown on the drawings.
 - 2. Crushed rock pavement base shall be finished to a tolerance of plus 0.00' to minus 0.10' from grade shown on the drawings.

1.03 SUBMITTALS

A. Samples

Submit one gallon samples of the following materials at least 30 days

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EARTHWORK
02200 Page 2

Submit one gallon samples of the following materials at least 30 days prior to beginning work covered in this section:

1. Select fill material
2. Crushed rock
3. Pipe bedding
4. Crushed rock pavement base
5. Sand

Identify location of source when submitting examples. Allow sufficient time to allow Owner to visit source prior to approving samples and source.

1.04 JOB CONDITIONS

A. Protection

1. Use all means necessary to protect all materials of this Section before, during and after installation and to protect all objects designated to remain.
2. Provide protection in compliance with all applicable provisions of current Municipal, State and Federal safety and health standards and acts, codes and ordinances.
3. Carefully maintain bench marks, monuments and other reference points.
4. Locate and protect existing utilities. Notify owner of any conflict between proposed work and existing utilities, or of any utilities found in the field that are not shown on the drawings. Precise location of utilities, as well as careful reconnaissance of all areas for both above and below ground utilities, as well as protection of same, shall be the sole responsibility of the contractor.
5. During construction, properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Control surface water to avoid damage to adjoining properties or to finished work on the site. Take remedial measures to prevent erosion of freshly graded areas and until such time as permanent drainage and erosion control features have been installed. Before leaving after each work day perform such operations as may be necessary to minimize possible damage or work slowdown caused by rain.
6. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Erosion Control Products

1. Filter Fabric
Filter fabric shall be Mirafi, 100X or equal as approved by Owner.
2. Wood Posts
Wood posts shall be sized to provide secure, continuous support of filter fabric and shall be able to maintain support until erosion protection is no longer required, as determined by Owner and regulatory agencies.
3. Straw Bales
Bales shall be locally available and bound tightly with wire.

2.02 MIXES

A. Select Fill Material

Imported and on-site fill material shall meet the requirements of Section 13-3.07 of the APWA Standards Specification. This material shall be:

1. Capable of conditioning to within 3% of optimum moisture for the compaction densities specified.
2. Capable of compaction to the specifications.
3. Shall be free from organic material or other debris.

B. Unsuitable Fill Material

Unsuitable fill materials are defined as any soil containing organic material, saturated soils, or soil containing other materials such as buried logs, stumps, metal or other debris which makes it unsuitable for developing specified soil densities.

C. Crushed Rock

Crushed rock fill behind walls shall consist of clean crushed stone, crushed gravel, or uncrushed gravel, 100 percent passing a 1 1/2" sieve, 90-10 percent passing a 5/8" sieve and 0-5 percent passing a No. 4 sieve as determined in accordance with ASTM C136.

D. Pipe Bedding

Bedding for culvert pipe shall meet the requirement of APWA Section 61-3.03C5.

E. Crushed Rock Pavement Base

Crushed rock base beneath asphaltic concrete pavement shall meet the requirements of APWA Section 23.

F. Sand

Sand for beach, children's play area, and fill beneath concrete stairs shall consist of clean uniformly graded material, free of silt, 100 percent passing a No. 80 sieve and 0-5 percent passing a No. 200 sieve.

PART 3 - EXECUTION

3.01 GENERAL

- A. Perform all earthwork in accordance with applicable portions of Sections 13 and 15 of APWA Standard specifications except as modified by these specifications.
- B. Grade stakes shall be set at each grid corner identified on the grading plan. Stakes shall be set prior to clearing and grubbing operations.

3.02 ROUGH GRADING

- A. The surface of areas to receive fill shall be free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction by the equipment used.
- B. When the slope of the natural ground receiving fill exceeds 17 percent (6 horizontal units to 1 vertical unit), the original ground shall be stepped or benched. Benches shall be cut to a firm competent soil condition. The lower bench shall be at least ten feet wide and all other benches at least six feet wide. The horizontal portion of each bench shall be compacted prior to receiving fill as specified herein- before for compacted natural ground. Ground sloped flatter than 20 percent shall be benched when considered necessary by the Owner.
- C. Grade entire subgrade area to reasonably true and even surfaces to conform to slopes and grades shown. Make proper allowance for base course and paving. Grade to uniform levels or slopes between points where grades are shown; round surfaces at abrupt changes of level. Rough grade areas to the following levels:
 - Paved areas:
 - To underside of surfacing or base course material.
 - All other areas:
 - To grades shown.
- D. Obtain final approval for rough grading before proceeding with finish grading.

3.03 EXCAVATION AND BACKFILL

- A. Excavation to be made to the elevations and the form shown on plans with finish grades and slopes cut true and straight in accordance with the plans and specifications.
- B. Use care in making cuts so backfill will not be required in cut areas. Excavation taken to greater depth than required to be filled with approved material placed to a minimum relative compaction of 85% in

layers not more than 8 inches deep. Material of a perishable, spongy, or otherwise improper nature not to be used in filling.

C. Paved Areas

1. The top eight inches below the finish subgrade in all paved areas shall be removed and replaced in 8-inch lifts, compacted per Section 13-3. 10E3 of APWA Standard Specifications.
2. After removal of top eight inches below finished subgrade per 1. above, remove and replace any pockets of unsuitable material encountered and replace in 8-inch lifts per section 13-3. 10E3.

D. Maximum allowable rock and clod size in the upper 8 inches of earth fill or cut subgrade is two (2) inches.

E. Repair all work due to over or careless excavation at expense of Contractor. Provide any pumping or draining necessary to deep excavated areas free from standing water.

3.04 COMPACTED FILL

- A. Prior to beginning any fill, remove any pockets of unsuitable material encountered and replace in 8-inch lifts per section 13.3. 10E3 of APWA Standard Specifications.
- B. All subgrade material within the zone of five feet outside the paved areas, from the stripped and grubbed surface to the final subgrade, shall be placed in 8-inch lifts and compacted per Section 13-3. 10E3 of APWA Standard Specifications.
- C. Comply with APWA Section 13-3. 10E, applicable sections.
- D. Fill materials to be "Select Fill Material" as specified herein, or imported fill as required.
- E. Place fill material in layers which when compacted do not exceed six inches (6") in thickness. Spread each layer evenly and mix thoroughly during spreading to ensure uniformity of material.
- F. After each layer has been placed, mixed and spread evenly, thoroughly compact to minimum relative compaction noted below as determined by the Compaction Control Test specified in Section 13-3. 10E5 of APWA Standard Specifications:
 1. Top 8" subgrade under asphalt paving and concrete stairs 95%
 2. Non-structural areas 90%Compaction to be accomplished by sheepsfoot rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers or other types of acceptable compacting equipment. Equipment to be of such design that it will be able to compact the fill to the specified density. Compaction to be continuous over the entire area and the equipment to make sufficient

trips to ensure that the desired density has been obtained.

- G. Surface of fill slopes to be compacted so that the slopes are stable and retain no excessive loose soil.

3.05 FINISH GRADING

- A. Upper 12" inches of all cut and fill areas shall be finished with amended topsoil, except for those areas scheduled to receive sand or base course materials for subsequent paving.
- B. Finish subgrades to allow for thickness and slopes of subsequent construction. Grade to provide uniform slope between elevation points or lines, or between such elevations and existing grades.
- C. Existing and proposed cut and fill banks to be carefully cut and trimmed as indicated on the drawings. For all banks to be planted, drag rather than blade, to avoid too smooth a surface. All loose rock over two inches (2") to be removed and disposed of as specified.

3.06 TRENCHING, BACKFILLING, AND COMPACTING

A. General

- 1. Take special notice and maintain the required horizontal and vertical depth clearances between proposed and existing utilities and other structures.
- 2. Carefully layout the route of each underground utility prior to trenching. Review drawings and coordinate with underground work by other trades to avoid conflicts.

B. Trenching

- 1. Excavate trenches for utilities (i.e. pipe, conduit, etc.) to the required lines, grades and elevation indicated on the drawings and as specified. Hand trim changes in direction and bottoms of trenches. Provide shoring in trenches over five feet in depth and also in trenches where unstable soil conditions are encountered.
- 2. The trench shall be excavated to the grades as shown on the plans or called for herein with allowances for bedding material if required. The width of the excavation measured at the top of the pipe shall not exceed 40 inches or 1.5 times the nominal diameter of the pipe plus 18 inches, whichever is less, for culverts see Section 61 APWA Standard Specifications.
- 3. In the event Utility Company regulations, code requirements, or the pipe manufacturer's recommendations differ from these provisions, the most restrictive requirements shall take precedence.
- 4. Where rock, hardpan, or other unyielding material is encountered, it

shall be removed below the bottom of the pipe for a depth of at least 12 inches and replaced with gravel or suitable select material.

5. Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, such unstable soil under the pipe and for a width of at least one diameter on each side of the pipe shall be removed to the depth directed by the Owner and replaced with gravel or other suitable selected material properly compacted to provide adequate support for the pipe.

C. Bedding

1. Lay and bed pipe in compacted select bedding to depths shown in drawings. Bedding shall be placed in more than one lift: the first lift, to provide at least 4" thickness under any portion of the pipe, shall be placed before the pipe is installed, and shall be spread smoothly so that the pipe is uniformly supported along the barrel, subsequent lifts of not more than 6" thickness shall be installed to the crown of the pipe and individually compacted to 90% density as determined by ASTM D698 - Method D. A further 6" lift shall be placed over the crown of the pipe.
2. Electrical conduits and irrigation sleeves will not require bedding material.

D. Backfilling

1. The remaining trench depth to be backfilled with select backfill material at optimum moisture content placed in 6 to 8 inch layers and compacted to a minimum relative density of ninety percent. Backfill material above the bedding material to grade shall normally be the excavated material unless it is unsuitable for recompaction. The Contractor shall then use suitable on-site material or selected material for backfill of the trench.
2. Compaction shall be attained by any method (other than water jetting) that will obtain the minimum specified relative densities, without damaging the buried lines.

E. Quality Control

1. Underground utility lines shall not be backfilled until:
 - a. The utility lines (pipes, conduit, etc.) have been inspected, and satisfactorily tested and approved.
 - b. The "as-built" elevations and dimensions are recorded on "Job Record Prints" and verified.
2. Backfilling shall be done carefully in such a manner as not to

disturb or damage the installation. Backfill shall start as soon as possible after approval to avoid damage to finished work.

F. Shoring and Pumping

1. All excavations shall be shored and braced by suitable methods and materials to prevent danger to persons or structures if required by the depth of excavation or safety regulations. Excavations shall be maintained free of water until pipe is bedded and anchored. All necessary pumping equipment, power, materials and qualified personnel shall be furnished by the contractor as required.

3.07 CRUSHED ROCK PAVEMENT BASE

A. Installation

Install base for asphaltic concrete paving per APWA Section 23. Total compacted depth shall be 6 inches, consisting of a 2 inch top course placed on a 4 inch base course.

3.08 SAND

A. Beneath Concrete Stair

Install in one lift, compacted to 95% minimum relative compaction, to thickness shown on plans.

B. Beach

Install in 6" lifts, compacted to 90% minimum relative compaction, to 24" depth.

C. Children's Play Area

Install in 6" lifts. Compact to 90% minimum relative compaction except for final lift which shall not be compacted.

3.09 EROSION CONTROL

A. General

It shall be the Contractor's responsibility to insure that every precaution through project completion will be taken to minimize the effects of site erosion and the potential for damage to adjacent property and bodies of water.

B. General Site Grading

V-Ditches shall be installed where necessary to collect surface water run off from graded areas. V-Ditches shall route water to siltation ponds

where filtration of silt loaded water will occur prior to release from site. Energy dissipation in the form of gravel berms or straw bales may be required to reduce velocities in ditches.

C. Siltation Pond(s)

1. Siltation pond(s) as necessary will be required to control the flow water from graded areas.
2. Maintenance: Silt pond(s) shall be routinely inspected and cleaned out to insure their proper functioning.

D. Stockpiling

1. Soils temporarily stockpiled shall be graded no steeper than 3:1.
2. Stockpiled wet soils shall be shaped and arranged so they are free to drain. Use silt fencing or other means to filter all runoff from these areas.

E. Straw Bales

1. Straw Bales shall be anchored with a minimum of two (2) stakes per bale. They shall be located as such so that water from the siltation pond or graded areas is required to pass through the straw bales. A minimum of one (1) foot freeboard is required in the straw bales.

F. Silt Fence

1. Silt fences shall be installed across V-Ditches, interceptor and diversion channels, and around soil stock piles as required to trap sediment.
2. Silt fences shall be used in combination with straw bales, gravel berms, and rock in areas of high flow velocities and siltation.
3. Maintenance. Silt fences shall be inspected regularly to insure proper filtration is occurring. Silts shall be cleaned away from the face of the fence and stakes shall be resecured or replaced as required.

G. Restoration of Site

1. Once final drainage patterns/systems have been established or installed and are working to the satisfaction of the Owner, the Contractor is responsible for restoring the ditches, ponds, etc. to finish grade requirements.

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CULVERTS
02434 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Drainage Culvert

B. Related Work

01051 Grades, Lines, and Levels
02200 Earthwork

1.02 QUALITY ASSURANCE

A. Standards

The "Standard Specifications for Municipal Public Works Construction", published by the Washington State Chapter, American Public Works Association (APWA), latest edition, shall apply unless modified herein.

PART 2 - PRODUCTS

A. Culvert Pipe

Shall be reinforced concrete pipe per APWA specifications with required fittings and connections.

B. Pipe Bedding

Refer to Section 02200 - Earthwork

PART 3 - EXECUTION

3.01 INSTALLATION OF CULVERT PIPE

- A. Install culvert pipe to line and grade shown on the plans with tight joint, per APWA Section 62 - 3.03. Refer to Section 02200 - Earthwork for trenching, bedding, and backfilling specifications.

END, SECTION 02434

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Trees
Shrubs
Ground Covers

B. Related Work

02100 Site Preparation
02200 Earthwork
02487 Hydroseeding
02750 Irrigation

C. Plant Quantities

Total number of plants shall be as drawn on the landscape plan. If this total number differs from the quantity specified in the plant list then the greater number shall be used for bidding purposes.

1.02 QUALITY ASSURANCE

A. Qualifications of Workers

Provide at least one person who shall be present at all times during execution of this portion of the work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods of installation, and who shall direct all work performed under this Section. This person shall have a minimum of 5 years experience in handling plants equal in size to those specified.

Staff shall be of sufficient size to be able to furnish required materials, deliver, plant and install all materials as shown on plans and prompt expedition of work. Upon request by owner, submit statement listing quantity and type of equipment proposed for use on the job; the positions and competence of workers employed and verification of ability to work with large plants.

B. Standards

1. All plants and planting materials shall meet or exceed the specifications of Federal, State and local laws requiring inspection for plant disease and insect control.

2. Quality and size shall conform or exceed standards in the current issue of the "American Standard for Nursery Stock" published by the American Association of Nurserymen.
3. Plant names shall conform to Standardized Plant Names (2nd Edition, 1942), American Joint Committee on Horticultural Nomenclature.

1.03 SUBMITTALS

A. General

Comply with the provisions of Section 01340.

B. Materials List

Within 45 days after award of the Contract, submit a complete list of all materials proposed to be furnished and installed under this Section, demonstrating conformance with the requirements specified.

C. Certificates

Deliver all certificates to the Owner.

D. Test Results

Submit copies of soil analysis (See this Section, Paragraph 3.02 A.) and Soil Fertilizer Analysis (See this Section, Paragraph 3.08 C.).

E. Samples

Submit one gallon samples of the following materials at least 30 days prior to beginning the work covered in this section:

1. Soil Amendment/Mulch (See this Section, Paragraph 2.04)
2. Planting Soil (See this Section, Paragraph 2.02)

1.04 SELECTION, TAGGING AND ORDERING OF PLANTS

A. Documentation

Submit documentation to the owner at least 30 days prior to the start of work under this Section that all plants have been ordered. Arrange procedure for inspection of plants with owner at time of submission.

B. Inspection

Plants shall be subject to inspection and approval by owner at place of growth and upon delivery to project site for conformity to specifications. Such approval shall not impair the right of inspection

and rejection during progress of the work. Submit written request for inspection of plants at place of growth. Written request shall state the place of growth and quantity of plants to be inspected. Owner reserves the right to refuse inspection at this time, if, in his judgement, a sufficient quantity of plants is not available for inspection.

1.05 SUBSTITUTIONS

Substitutions of plants will not be permitted unless authorized in writing by the owner. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of Contract price. Such proof shall be substantiated and submitted in writing to the Owner at least 30 days prior to start of work under this Section. These provisions shall not relieve Contractor of the responsibility of obtaining specified materials in advance if special growing conditions or other arrangements must be made in order to supply specified materials.

1.06 PLANTING SCHEDULE

- A. Submit a proposed planting schedule to the Owner for approval at least 30 days prior to start of work under this Section. After approval, no modification shall be made to this schedule without written authorization by the Owner.
- B. In general, the work shall proceed as rapidly as the site becomes available, consistent with normal seasonal limitations for planting work.

1.07 PRODUCT HANDLING

A. Delivery and Storage

- 1. Furnish products in manufacturer's standard containers bearing original labels showing quantity, analysis and name of manufacturer.
- 2. Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product.

B. Plants

- 1. When shipped by truck, pack to provide protection against climate and breakage; tie to prevent whipping; cover tops to minimize drying or spray with antitranspirant.
- 2. When shipped by rail, pack carefully and properly ventilate; prevent damage to bark, branches, and root system; exercise care to insure heavily balled plants are not cracked.
- 3. Do not handle individual plants by trunk, limbs, or foliage but only by box, ball, or other container.

4. Install all plants immediately upon delivery to project site. If there is unavoidable delay cover rootballs with moist soil or mulch.
5. Immediately remove from site all plants which are not true to name or which do not comply with specified requirements.

1.08 PLANTING SEASON LIMITS

- A. Bare root material shall be planted from November 15th through April 15th. At no time shall bare root material be planted after leafing out. Boxed, balled, or containerized plant material may be planted at any time.
- B. No planting shall take place during freezing weather or when ground is frozen or muddy.

1.09 CLEAN UP

Keep all areas of work clean, neat and orderly at all times. Keep all paved areas clean during planting and maintenance operations. Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance to the satisfaction of Owner.

1.10 MAINTENANCE

- A. Begin maintenance after each plant and each portion of lawn or ground cover is installed and continue under Final Acceptance.
- B. Maintenance of new planting shall consist of watering, cultivating, weeding, mulching, re-staking, tightening and repairing of guys, resetting plants to proper grades or upright position, restoration of the planting saucer, and furnishing and applying such sprays and invigorants as are necessary to keep the planting free of insects and disease and in thriving condition.
- C. Protect planting areas and plants at all time against damage of all kinds for duration of maintenance period. Maintenance includes temporary protection fences, barriers and signs as required for protection. If any plants become damaged or injured, treat or replace as directed by Owner at no additional cost to Owner.

1.11 FINAL ACCEPTANCE

A. General

Work under this Section will be accepted by Owner upon satisfactory completion of all work, including Maintenance, but exclusive of replacement of plant materials under the Warranty Period. Upon Final Acceptance, the Owner will assume responsibility for maintenance of the work.

B. Inspections

1. Make written request for inspection after planting operations have been completed. Such inspection is for the purpose of establishing the beginning date of the Warranty period.
2. Submit written requests for inspections to Owner at least 7 days prior to anticipated inspection date.

1.12 WARRANTY PERIOD AND REPLACEMENTS

A. General

Contractor shall warrant that all plants planted under this Contract will be healthy and in flourishing condition of active growth one year from date of Final Acceptance.

B. Five Percent Retention

Five percent (5%) of the Contract Cost of the work covered in this section shall be retained for one (1) year to ensure compliance with the warranty.

C. Warranty Extension

Any delay in completion of planting operations which extends the planting into more than one planting season shall extend the Warranty Period correspondingly.

D. Plant Replacements

1. Replace, without cost to Owner, and as soon as weather conditions permit, all dead plants and all plants not in a vigorous, thriving condition, as determined by the Owner during and at the end of Warranty Period. Plants shall be free of dead or dying branches and branch tips, and shall bear foliage of a normal density, size and color. Replacements shall equal or exceed requirements of this specification and be of same kind to match adjacent specimens.
2. Contractor shall not be held responsible for failures due to neglect by Owner or vandalism during Warranty Period. Report such conditions to Owner in writing.
3. The warranty on plants shall be limited to one replacement unless installation of plant does not meet these specifications.

1.13 WARRANTY INSPECTION

A final inspection will be held between Contractor and Owner or Owner's representative at the end of the one-year period. It shall be the Contractor's responsibility to notify the Owner 10 days prior to the anticipated meeting. Final acceptance will be certified in writing by the Owner.

PART 2 - MATERIALS

2.01 PLANTS

A. General

Plants shall be nursery grown in accordance with good horticultural practices under climatic conditions similar to those of project for at least two years unless specifically otherwise authorized by Owner in writing. Unless specifically noted otherwise, all plants shall be of specimen quality.

B. Plant Health

Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs, or larvae, and shall have healthy, well developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving growth.

C. Plant Size

Plants shall be true to species and variety and shall conform to measurements specified except that plants larger than specified may be used if approved by Owner. Use of such plants shall not increase Contract price. Height and spread dimensions specified refer to main body of plant and not branch tip to tip. Caliper measurement shall be taken at a point on the trunk 6 inches above the natural ground line for trees over 4 inches in caliper, and at a point 12 inches above the natural ground line for trees over 4 inches in caliper. If a range of size is given, no plant shall be less than the minimum size and not less than 40% of the plants shall be as large as the maximum size specified. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required.

D. Labels

Label all plants with durable, legible labels stating correct plant name and size. Attach securely to each plant.

E. Container Grown Plants

Container stock shall have grown in the containers in which delivered for at least six months, but not over two years. Samples must prove no root-bound conditions exist. No container plants that have cracked or broken balls of earth when taken from container shall be planted except upon special approval by Owner.

F. Damaged Plants

Plants shall not be pruned before delivery. Trees which have damaged or crooked leaders, or multiple leaders, unless specified, will be rejected. Trees with abrasions of the bark, sunscalds, disfiguring knots, or fresh cuts of limbs over 3/4 inch which have not completely calloused, will be rejected.

2.02 PLANTING SOIL

Shall consist of a thorough mixture by volume of:

50% amended topsoil type A
25% sand (max. 10% over #1/4; max. 30% through max. 35 through #100; blend sand)
25% mulch
Fertilizer amendment

Topsoil Type A:

The topsoil shall be friable surface soil from the A horizon as determined by the United States Agriculture Soil Conservation Service Soil Survey. Topsoil shall be free from materials toxic to plants growth; noxious weed seeds, rhizomes, roots; subsoil; stones and debris. 100% of the topsoil shall pass through a 1-inch screen. Maximum Electrical Conductivity shall be 10%.

Topsoil Type A shall consist of a sandy clay loam, sandy loam, loam, clay loam, silty clay loam, or silt loam soil. These soil textural classes shall be determined by the United States Department of Agriculture Classification System. These textural classes shall be restricted by the following maximum percentage compositions based on the materials passing the Number 10 screen:

Separates	Maximum Percentages
	Allowable
Sand	65%
Silt	80%
Clay	45%

2.03 FERTILIZER

A. General

Standard commercial grade of organic or inorganic fertilizer containing the percentage of total nitrogen, available phosphoric acid and water soluble potash in amount specified below. Furnish in standard unopened containers with weight, name of plant nutrients and manufacturer's guaranteed statement of analysis clearly marked, in accordance with state and federal laws.

B. Soil Amendment fertilizer

Shall consist of the following and shall be mixed by commercial fertilizer supplier at rates recommended by approved soils consultant:

Ureaform or Urea Formaldehyde
Superphosphate (0-10-0)
Potassium sulfate
Dolomite limestone
Trace elements

C. Top-dress Fertilizer

Complete fertilizer, wax-coated pellet with the following percentage analysis:

15 - Nitrogen
5 - Phosphorus
7 - Potassium

2.04 MULCH

Mulch shall be Groco, a composted sawdust/sludge mixture or approved equal.

2.05 ANTI-DESICCANT

Wilt-Pruf, by Nursery Specialty Products, Inc., 202 East 47th Street, New York, N.Y. 10017, or approved equal.

2.06 DOLomite LIME

Agricultural grade mineral soil conditioner containing 35% minimum magnesium carbonate and 49% minimum calcium carbonate, 100% passing No. 65 sieve. Kaiser Dolomite 65 AG or approved equal.

2.07 WRAPPING AND STAKING MATERIALS

A. Wrapping Material

Standard 6" wide burlap wrap as approved by the American Association of Nurserymen.

B. Rubber Hose

Black 2-ply fabric bearing hose having minimum inside diameter of 1/2 inch.

C. Twine

Jute, minimum 2-ply.

D. Burlap

Shall be made of jute and shall weigh not less than 7.2 ounces per square yard. Substitute material shall possess equal strength, permeability, and resistance to tearing.

E. Wire

14-gauge galv. wire

F. Tree Stakes

2"x2" x required height construction grade Douglas Fir pre-stained dark brown. Height must be sufficient to be secured in a minimum of 12" undisturbed native soil or compacted sub-grade.

PART 3 - EXECUTION

3.01 DIGGING AND HANDLING

A. Anti-Desiccant Application

At the discretion of the Owner, apply on deciduous trees or shrubs in leaf and evergreen trees or shrubs before being dug, following manufacturer's instructions.

After planting and watering, spray plants which need further protection.

B. Bare Root Plants

Plants designated BR in plant list are to be dug with substantially all the root system intact, and earth carefully removed from roots. After they are dug, protect roots by puddling or other means to prevent drying.

C. Container Grown Plants

Plants which have been grown in containers, such as pots, earth intact after removal, without being rootbound. Do not remove from containers until ready for planting.

D. Ball and Burlap

Plants designated B&B on plant list are to have firm natural balls of soil in sizes shown in American Standard for Nursery Stock; wrapped firmly with burlap or approved material; bound carefully with twine, cord, or wire mesh; covered with moist soil, mulch, or other protection.

3.02 AMENDMENT OF EXISTING SOIL

A. Soil Analysis

Obtain a representative soil sample from the topsoil portion only of the rough graded site for soil analysis from an accredited soils laboratory. Use soil analysis to obtain recommendations from a soils consultant for amendments in all planting/lawn areas. Costs of testing and consultant to be paid for by Owner. Submit results to Owner prior to beginning any incorporation of amendments.

B. Cultivate existing soil to a depth of 8 inches. Remove stones over 2" in diameter, root, clumps, weeds or other extraneous large material.

C. Grind existing sod mound to uniform, fine consistency, removing stones over 2" in diameter, root, clumps, weeds or other extraneous large material. Spread uniformly over lawn area only.

D. Apply amendments at the following rates per 1,000 square feet:

1. Mulch Amendment

12 cubic yards per 1000 S.F. of 4-inch depth. Mulch in the quantities specified above shall be the soil amendment for all planting and lawn areas.

2. Soil Amendment Fertilizer at the rate specified by soils consultant and approved by Owner.

3. Incorporate thoroughly with top 8-inch soil layer. Bring amended soil to finish grades and elevations shown on Contract Documents. Do not work soils under frozen or muddy conditions. Remove stones over 3/4" diameter, roots, clods, weeds, or other extraneous material.

4. Finish Grading

Finish grade all areas to requirements specified on grading plan, Sections and Specification Section 02200, Earthwork.

3.03 LAYOUT AND EXCAVATION OF PLANT PITS

A. Layout

Layout plants or stake positions in locations shown on drawings. Owner will check location of plants in the field and shall adjust to exact position before planting begins. Owner reserves right to refuse inspection if, in his opinion, an insufficient quantity of plants is available for layout check.

B. Excavation

Excavate tree, shrub and groundcover areas per drawings.

Subsoil Removal

Separate subgrade soils from the upper topsoil portions and remove from planting area during planting operations. Loosen subgrade in pits and beds to a depth of 3 inches. Thoroughly scarify sides of planting pits.

3.04 DRAINAGE, OBSTRUCTIONS AND DETRIMENTAL SOILS

A. Detrimental soils

Notify Owner in writing of any soil or drainage conditions detrimental to growth of plants.

B. Drainage

Test drainage of plant pits by filling with water twice in succession. Conditions permitting the retention of water for more than twenty-four (24) hours shall be brought to the attention of the Owner.

C. Obstructions

If rock, underground construction work, tree roots or other obstructions are encountered in the excavation of plant pits, alternate locations may be selected by the Owner. Where locations cannot be changed, submit cost required to remove the obstructions to a depth of not less than six inches (6") below the required pit depth. Proceed with work after approval of Owner.

3.05 PLANT PLACEMENT

A. General

Protect plants at all times from sun or drying winds. Plants that cannot be planted immediately on delivery shall be kept in the shade, well protected, and shall be kept well watered.

B. Container Removal

Canned stock shall be removed carefully after cans have been cut on two sides with approved cutter. Do not use spade to cut cans. Do not lift or handle container plants by tops, stems, or trunks at any time. After removing plant from container, scarify side of rootball to prevent rootbound condition.

C. Placement

Use planting soil (3.02) or approved equivalent to back-fill plant pits. Place plant and rotate to best advantage from adjacent walkways, etc. Set plant plumb and brace rigidly in position until planting soil has been tamped solidly around the ball and roots. When plant pits have been backfilled approximately 2/3 full, completely flood with water before installing remainder of the planting soil to top of pit, eliminating all air pockets.

D. Burlap Removal

When 2/3 backfilled cut ball ties, remove burlap from top and sides, cut and adjust to prevent formation of air pockets. Do not pull burlap from under the balls.

E. Mulch and Saucer

Smooth planting area to conform to specified grades after full settlement has occurred.

Mulch all pits and beds with a 2-inch layer of specified mulch.

Form saucer with 3-inch high berm around tree and shrub pits per drawings. Do not install saucer and berm for trees located in lawn areas.

Saturate planting area immediately with water.

3.06 GUYING AND STAKING

Immediately after planting, guy and stake in accordance with planting details. Plants shall stand plumb after guying. Guy trees at points of branching, making sure that the rubber hose protector provides adequate protection for the tree trunk.

3.07 PRUNING

Prune plants only after planting and according to standard horticultural practice to preserve the natural character of the plant. Pruning to be done under supervision of Owner. Remove all dead wood, suckers and broken or badly bruised branches. Use only clean, sharp tools.

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3.08 TOP DRESS FERTILIZER

A. First Application

Immediately after complete mulching of tree, shrub and groundcover beds, apply Top Dress Fertilizer at the rate of seven (7) pounds per 1000 square feet.

B. Subsequent Applications

1. Beginning April 15 and extending to August 15 of the first full growing season make monthly applications of Top Dress Fertilizer to all tree, shrub and groundcover beds at the rate of seven (7) pounds per 1000 square feet.
2. In planting areas for which Final Acceptance occurs during growing season continue top dress fertilizer application from First Application during the first and following growing season at specified rates and intervals until warranty inspection.

C. Soil Fertilizer Analysis

At the discretion of the Owner, obtain soil fertilizer analysis at any time during the Top Dress Fertilizer period. Such analysis to be from an accredited soils laboratory. Costs of testing to be paid by Owner. Submit results of testing to Owner. Increases in cost due to modification of rates or interval of Top Dress Fertilizer application shall be paid as extra work.

END, SECTION 02480

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HYDROSEEDING
02487 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Hydroseeded lawn

B. Related Work Described Elsewhere

02200 Earthwork
02480 Landscaping
02750 Irrigation

1.02 QUALITY ASSURANCE

A. Qualifications of Workers

Provide at least one person who shall be present at all times during execution of this portion of the work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods for their installation, and who shall direct all work performed under this Section. This person shall have a minimum of 5 years experience with hydroseeding operations.

Staff shall be of sufficient size to be able to furnish required deliver and install all materials as shown on plans and prompt expedition of work. Upon request by Owner, submit statement listing quantity and type of equipment proposed for use on the job and the positions and competence of workers employed.

B. Standards

1. Seed

a. All seed shall be state of Washington Certified Turfgrass Grass Seed.

b. All seed containers shall list the following information:

- 1.) Name of Producer or Seller
- 2.) Lot Number
- 3.) Common name of the variety
- 4.) Percentage Purity of each species
- 5.) Percentage Live Seed of each variety expressed by germination
- 6.) Percentage of weed or crop seed
- 7.) Percentage inert matter
- 8.) Date when seed was last tested for germination

- c. Seed shall meet all minimum requirements of Washington State Law for Certified Turfgrass seed.

1.03 SUBMITTALS

A. General

Comply with the provision of Section 01340.

B. Certificates

Deliver to Owner certificates demonstrating compliance with seed quality standards.

1.04 SCHEDULE

Submit a proposed schedule to Owner for approval at least 30 days prior to start of work under this Section.

1.05 PRODUCT HANDLING

A. Delivery and Storage

1. Furnish products in manufacturer's standard containers bearing original labels showing quantity, analysis and name of manufacturer.
2. Store products with protection from weather or other conditions which would damage or impair the effectiveness of the product.

1.06 SEEDING SEASON

Seeding may take place only during the period beginning April 1st and ending October 15th.

1.07 CLEAN UP

Keep all areas of work clean, neat and orderly at all times. Keep all paved areas clean during planting and maintenance operations. Clean up and remove all deleterious materials and debris from the entire work area prior to Final Acceptance to the satisfaction of Owner.

1.08 LAWN ESTABLISHMENT PERIOD

- A. Lawn establishment period shall begin immediately following hydroseeding and shall include any necessary watering, weed control, or repair and reseeding of damaged or non-germinating areas.

B. General

The Contractor shall furnish all labor, material and equipment required to complete the work described herein in strict accordance with the drawings and/or terms of the contract. The general contractor shall supply adequate water to the site.

C. Watering

1. Seeded Lawn

The Contractor shall provide all labor and arrange for all watering necessary for establishment of the seed. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary and in sufficient quantities to maintain moist soil to a depth of at least 4 inches. Watering should be done during the heat of the day to help prevent wilting.

D. Mowing

1. The first mowing shall take place when the lawn reaches 3 inches in height. Cutting height shall be 2 inches.
2. Mow lawn a second time when it again reaches 3 inches in height. Cutting height shall be 2 inches.
3. Thereafter mowing height shall be maintained between 1 1/2 and 2 1/2 inches unless otherwise specified.

E.

The Contractor shall not be held liable for damages incurred to lawn caused by de-icing compounds, fertilizers, pesticides and other materials not applied by him or under this supervision nor those caused by acts of God or vandalism.

1.09 PRELIMINARY ACCEPTANCE INSPECTION

A. Establishment Maintenance

Establishment maintenance of lawn areas shall begin immediately and continue until final acceptance.

B. Preliminary Acceptance Inspection

Notify Owner at least 24 hours in advance of completion of all work and request PRELIMINARY ACCEPTANCE.

1.10 FINAL ACCEPTANCE

A final lawn inspection will be held between Contractor and Owner or Owner's representative at the end of the 90-day establishment period or

after the second mowing, whichever occurs later. Acceptance of lawn seeding shall be based on a uniform stand of grass. Areas of one (1) square foot or more which are bare or not having a uniform grade of grass shall be reseeded by the Contractor. Reseeding shall conform to all specification requirements. It shall be the Contractor's responsibility to notify the Owner 24 hours prior to the anticipated meeting.

PART 2 - PRODUCTS

2.01 HYDROSEED

A. Seed

1. Seed shall conform to the standards for "Certified" grade seed or better as outlined by the State of Washington Department of Agriculture "Rules for Seed Certification", latest edition. Seed which has become wet, moldy, or otherwise damaged in transit or storage will not be accepted.

2. Seed Mixture

Guaranteed	Percentage	Guaranteed		
	<u>by Weight</u>	<u>Seed Type</u>	<u>Germination</u>	<u>Purity</u>
	30%	Perennial Rye	90%	98%
	30%	Red Fescue	90%	98%
	30%	Kentucky Bluegrass	80%	99%
	10%	White Dutch Clover	80%	98%

B. Wood Cellulose Fiber Mulch

Wood cellulose fiber mulch shall be specially processed wood fiber containing no growth or germination inhibiting factors and shall be dyed a suitable color to facilitate inspection of the placement of material. It shall be manufactured in such a manner that after addition and agitation in slurry tanks with water, the fibers in the material will become uniformly suspended to form a homogenous slurry. When hydraulically sprayed on the ground, the material shall allow the absorption and percolation of moisture.

Each package of the cellulose fiber shall be marked by the manufacturer to show the air dry weight content. All mulch material must be acceptable to the Owner.

C. Stabilizer

Stabilizer shall be of the type that binds the mulch to itself and to the soil.

D. Water Soluble Fertilizer

Water soluble fertilizer shall be a standard commercial grade of organic or inorganic fertilizer of the kind and quality specified herein. It may be separate or in a mixture containing the percentage of total nitrogen, available phosphoric acid, and water-soluble potash in the amounts specified as follows:

Nitrogen -	5%
Phosphorus -	5%
Potassium -	5%

All fertilizers shall be furnished in standard unopened containers with weight, name of plant nutrients, and manufacturer's guaranteed statement of analysis clearly marked, all in accordance with State and Federal Laws.

PART 3 - EXECUTION

3.01 SEED BED PREPARATION

A. Cultivation/Amendment of Existing Soil

See Section 02480, Landscaping

B. Finish Grading

Finish grade all areas to requirements specified on grading plan and specification Section 02200, Earthwork.

C. Rolling and Raking

Roll seed bed with a water ballast roller weighing 60 to 70 lbs. per linear foot. Rake to remove stones or debris with any dimension greater than 1/2 inch and bring finish grade to one inch below tops of curbs, walks, existing sod or other horizontal surfaces. Final grade shall be free of any depressions holding water and shall have a uniform slope.

D. Hydroseed immediately after rolling

E. Soil Analysis

At the discretion of the Owner, obtain soil analysis of amended soil from an accredited soils laboratory. Costs of testing to be paid for by Owner. Submit results of soil analysis to Owner prior to beginning any hydroseeding operations.

3.02 HYDROSEEDING OPERATIONS

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HYDROSEEDING
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- A. Hydroseeding shall be done with an approved hydroseeder which utilizes water as the carrying agent, and maintains continuous agitation to keep seed, fertilizer, tackifier and other approved additives in the slurry, mixed and suspended homogeneously until pumped from the tank. The hydroseeder shall be equipped with a set of hydraulic discharge spray nozzles, which will provide a uniform distribution of the slurry over the area to be seeded.

The seeding slurry shall consist of these ingredients, to be applied at the following rates per acre for respective Lawn Types.

Wood fiber mulch	2,000 lbs.
Fertilizer	200 lbs.
Seed (total)*	150 lbs.
Tackifiers	40 lbs.

* Total grass seed mix rate

- B. Protection of Adjacent Areas

Hydroseeding shall be executed without compacting, disrupting, or overseeding adjacent planting areas or paved areas.

END, SECTION 02487

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ASPHALTIC CONCRETE PAVING
02513 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Final preparation of subgrade
Soil sterilization under pavement
Asphalt surfacing

B. Related Work Described Elsewhere

02200 Earthwork
02577 Pavement Marking

1.02 QUALITY ASSURANCE

A. Qualifications of Workmen

1. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the design and application of work described for this Section, and who shall be present at all times during progress of the work of this Section and shall direct all work performed under this Section.
2. For actual finishing of asphaltic concrete surfaces, and operation of the required equipment, use only personnel who are thoroughly trained and experienced in the skills required.

B. Codes and Standards:

The "Standard Specification for Municipal Public Works Construction", published by the Washington State Chapter, American Public Works Association (APWA), current edition, shall apply unless modified herein.

C. Tolerances

1. Asphaltic concrete surfacing shall be finished to a tolerance of plus or minus 0.05' at any point from line and grade shown on the drawings.
2. Paving to drain properly before being accepted. There shall be no variation greater than 1/4 inch plus or minus from a 10 foot straight-edge, except at grade changes.

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ASPHALTIC CONCRETE PAVING
02513 Page 2

1.03 JOB CONDITIONS

A. Protection

Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all other trades. Protect asphalt paving against vehicular traffic for 48 hours following application.

B. Replacement

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Soil Sterilizer

Soil sterilizer shall be Casseron or equal as approved by Owner.

2.02 MIXES

A. Crushed Rock Pavement Base

Refer to Section 02200 Earthwork

B. Asphaltic Surfacing Materials

1. Asphalt concrete pavement shall be Asphalt Concrete Class B.
2. All asphaltic concrete shall be hot plant mixed, and shall be furnished from a commercial asphalt hot mix plant.
3. The aggregates shall have a temperature between 275 degrees F and 325 degrees F when placed in the mixer. The liquid asphalt shall be heated to a temperature between 275 degrees F and 350 degrees F, and shall be added during mixing.
4. Mix the combined aggregate and liquid asphalt in a pug mill mixer with a capacity of not less than 3000 pounds per batch. Continue the mixing for at least 45 seconds after all ingredients have been placed in the mixture, and until the liquid asphalt is distributed uniformly throughout the mixture.
5. The mixture shall have a temperature between 290 degrees F and 320 degrees F when it leaves the plant.

2.03 OTHER PRODUCTS

All other materials, mixes and products, not specifically described but required for proper and complete installation of the work of this Section, shall be as selected by the Contractor subject to the approval of the Owner.

PART 3 - EXECUTION

3.01 INSPECTION

Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 FINAL PREPARATION OF SUBGRADES

After preparation of subgrade as specified in Section 02200 of these Specifications, thoroughly scarify and sprinkle the entire area to be paved, and then compact by rolling to a smooth, hard, even surface of 95% compaction to receive the crushed surfacing. Finish to the required grades, with due allowance for the thickness of asphaltic concrete surfacing to be placed thereon.

1. Moisten with water to approximately optimum moisture content, and while moist, roll until the surface is unyielding, with a power roller of such weight as to develop a pressure of not less than 200 pounds per linear inch of roller width.
2. Correct irregularities by dressing down or filling as may be required, to bring areas to true sub-grade elevations.
3. Where filling is required, scarify the sub-grade to bond the new material to the in-place material; use additional material, as required, subject to the approval of the Owner, and provided by the Contractor.
4. Remove excess material from the site to a legal disposal area.

3.03 EQUIPMENT

- A. Compacting equipment shall be self-propelled tandem rollers, except that hand-held vibrator compactors may be used in areas not accessible to rollers when specially approved by the Owner.
- B. Coating equipment: All equipment for soil sterilizing shall be specifically designed for that purpose and shall be subject to the

inspection and approval of the Owner.

- C. Paving equipment shall be spreader box type asphalt paving machines capable of maintaining line, grade, and the minimum surface thickness specified.

3.04 PLACEMENT OF CRUSHED SURFACING

A. Preparation:

After subgrade has been completed as described in Paragraph 3.02 above, apply the specified sterilizer over the entire area to be paved, applying in strict accordance with the manufacturer's recommendations.

B. Placement:

1. After completion of sterilizing operations, place the specified base material over all areas to be paved.
2. Wet and compact the base material, using only the amount of water needed to secure optimum moisture content and compaction of 95%.
3. Bring the compacted base finish to a uniformly smooth and hard surface conforming to the lines, grades, and elevations, shown on the Drawings.

3.05 PLACEMENT OF ASPHALTIC CONCRETE

A. Receipt of Materials:

1. Do not accept material unless it has a temperature of at least 280 degrees F.
2. Do not place asphaltic concrete when the atmospheric temperature is below 50 degrees F, nor during fog, rain, or other unsuitable conditions.

B. Contact Surfaces:

Paint all contact surfaces and all cold or existing pavement joints with an RS-1 asphalt emulsion before the new paving is laid. Exercise extreme care in applying emulsion tack coat and avoid applying on exposed surfaces of adjacent construction.

C. Spreading:

Spread material in a manner which requires the least handling. Spread in one layer to a compacted depth of 2 1/2 inches on the parking lot/driveways and to a compacted depth of 1 1/2 inches on the pedestrian trail.

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ASPHALTIC CONCRETE PAVING
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D. Rolling:

1. At proper time after the mixture has been spread, roll with power rollers having a weight of not less than 200 pounds per linear inch width of roller width until the surface is unyielding, true to grade and free from surface irregularities. Use hot iron tampers at areas that are inaccessible to the rollers. Provide a specific gravity of the wearing surface after the final rolling of not less than 2.0. Treat surface of the rollers with water or oil to prevent the mixture from adhering to same, but not in a quantity that would adversely affect the surface of the paving.
2. Roll the surface in at least two directions until no roller marks are visible.
3. Finished surfaces shall be free from non-draining depressions, and shall show no variation from the designed elevations greater than 1/8" when checked with a 6'-0" straight edge.

END, SECTION 02513

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PAVEMENT MARKING
02577 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Description of Work

Striping for traffic control and parking

B. Related Work Specified Elsewhere

02513 Asphaltic Concrete Paving

1.02 QUALITY ASSURANCE

A. Standards

The State of Washington "Standard Specification for Road and Bridge Construction", current edition, shall apply except as modified herein.

PART 2 - PRODUCTS

2.01 TRAFFIC LINE PAINT

Traffic line paint shall meet Federal Specification TT-P-85b or TT-P-115c. Color shall match the Standard Highway Color Charts established in the Manual for Signing and Pavement Marking of the National System of Interstate and Defense Highways.

PART 3 - EXECUTION

3.01 GENERAL

Striping operations shall be reserved as a finishing operation. Install the permanent traffic control marking per the approved plans.

END, SECTION 02577

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IRRIGATION SYSTEM
02750 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Automatic sprinkler system
Electrical supply and controls

B. Related Work Described Elsewhere

01500 Temporary Facilities and Controls
02200 Earthwork
02480 Landscaping
02487 Hydroseeding

1.02 QUALITY ASSURANCE

A. Qualification of Contractor

Contractor must be a Washington State licensed lawn sprinkler contractor. The sprinkler system must be installed by a qualified lawn sprinkler or journeyman plumber. All electrical work must be done by an electrician licensed in Washington State. Any exceptions to the above shall be made only on approval by the Owner. The quality of labor and materials shall conform to the Uniform Plumbing Code and the special specifications pertaining to the subject contract.

B. Verification

Before proceeding with any work, the Contractor shall verify all dimensions pertaining to the spacing of sprinkler heads and location of valves and other equipment. Should he find any errors or conflicts in the drawings and/or specifications, the Contractor shall immediately notify the Owner.

C. Codes and Regulations

The Contractor shall keep himself fully informed and shall comply with all existing laws, codes, ordinances, and regulations which in any way affect the conduct of the work. In particular, the Contractor shall confirm that the work meets all requirements for cross connection control. The Contractor shall secure at his own expense all necessary permits for construction.

D. Conduct of Work

1. The Contractor shall maintain continuously a competent superintendent or foreman during progress of the work, with authority to act for him in all matters pertaining to the work.

2. The Contractor shall progressively clean the work site of debris and rubbish as the work proceeds. He shall repair to the satisfaction of the Owner or his representative any damage to the existing facilities. It is the Contractor's responsibility to determine the locations of all utilities. Should the ditching intercept and damage any existing utilities, all further work shall be held up until the Owner is advised and can supervise the repair.
3. The Contractor shall be responsible for the provision of barricades and safety guards, and any other structures or improvements necessary for the complete protection of the public.

1.03 SUBMITTALS

A. Samples

Comply with the provisions of Section 01340.

B. Product Data

Within 35 days after award of the Contract, and before any materials of this Section have been delivered to the job site, submit to the Owner:

1. A complete materials list and catalog cuts of all items proposed to be furnished and installed under this Section;
2. The manufacturers' recommended methods of installation which when approved by the Owner, shall become the basis for inspection and accepting or rejecting actual installation methods used on the work.

C. Project Record Drawings

1. Conform to General Conditions Article 6 Paragraph A. As-Built Records and/or as modified herein.
2. Reproducible As-Built Record drawings.
 1. Provide Owner in addition to requirements per General Conditions upon completion of project and prior to final payment, a complete separate set of sepia transparencies showing the irrigation system as installed. As-Built notations used shall be approved by Owner.

1.04 INSPECTION

The Contractor shall advise the Owner at least 24 hours before pressure tests are to be conducted and shall have the approval of the Owner or his representative before backfilling.

1.05 JOB CONDITIONS

A. Protection

Use all means necessary to protect the materials of this Section before, during, and after installation and to protect the work and materials of all other trades.

B. Replacements

In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.01 GENERAL

All materials shall be new and of domestic manufacture. Any substitution of materials other than specified shall be approved by the Owner or his representative. All material over-ages at the completion of the installation are the property of the Contractor and are to be removed from the site.

2.02 PIPE

A. Galvanized Steel Pipe

1. All galvanized steel pipe shall be schedule 40, threaded, coupled, and hot-dip galvanized, and shall comply with ASTM, A120 AND A53.
2. All fittings for galvanized steel pipe shall be 150 psi rated galvanized malleable iron, banded pattern.
3. Pipe sizes indicated on the Drawings are nominal inside diameter unless otherwise noted.

B. Plastic Pipe

1. All plastic pipe shall be continuously and permanently marked with the manufacturer's name, pipe size, IPS size (schedule number), type of material, and code number.
2. PVC pipe shall be virgin, high impact, polyvinyl chloride pipe, and conform to Commercial Standards CS 257-63.
3. All plastic pipe shall be guaranteed by its manufacturer to have

passed, or be capable of passing, the Anhydrous Acetone Immersion Test and to be free from manufacturing defects.

4. All lateral lines, downstream of the control valves, shall be schedule 200 polyvinyl chloride, type I-II, bearing the seal of the National Sanitation Foundation, and complying with ASTM D2466.
5. All mainlines polyvinyl chloride pipe, upstream of the control valves, shall be Schedule 40, ASTM D-1785.
6. Plastic fitting and connections shall be rigid polyvinyl chloride (PVC) schedule 40 complying with ASTM D2466.
7. For joining, use a solvent complying with ASTM D2466 and recommendations of the manufacturer of the plastic pipe used.
8. All PVC pipe and fittings must be non-toxic, free from taste and odor and self-extinguishing.
9. Pipe shall be homogenous throughout and be free from defects, cracks, holes, foreign materials, wrinkles, dents, and blister.
10. All pipe must be delivered in at least 20-foot lengths with pipe ends provided with protection to prevent damage.

2.03 RISERS

A. Lawn Heads

Lawn heads shall have schedule 80 PVC or schedule 40 galvanized steel pipe risers with multiple swing-joint assembly of nipples and elbows to permit readjustment of head.

2.04 ELECTRICAL SUPPLY SERVICE

A. Conduit

Rigid metal type conduit shall conform to all applicable local codes.

B. Junction Boxes

Junction boxes shall conform to all applicable local codes.

C. Conductors

All single electrical conductors shall be approved stranded copper conforming to the applicable portions of ASTM Designation B 3 and B 8. Insulation shall be 600 volt class. Chemically cross-linked polyethylene type USE insulation of Code thickness shall be used for all single conductors in underground electrical systems.

2.05 CONTROL WIRE FOR AUTOMATIC VALVE OPERATION

- A. Control wire must be insulated single strand copper for 24 to 50 volts and UL approved as Type UFCS (Underground Feeder), size #14/1.
- B. Copper conductor must meet or exceed ASTM B-3 specifications.
- C. Color of wire: Red, white, orange, and black colors must be available.

2.06 PIPE SLEEVES

- A. All pipe sleeves under paving shall be schedule 40 polyvinyl chloride, type I-II.
- B. Size of pipe sleeve shall be large enough to accommodate sprinkler lateral and/or main lines and control wiring where needed.

2.07 OTHER SUPPLIES

- A. Electrical tape shall be black plastic, 3/4" wide and a minimum of 0.007" thick and the all-weather type.
- B. All electrical wire splices must be made water tight with either 3M-Scott's Lock Seal tack 3576-77-78 or PenTite PVC socket and sealing plug Rainbird "Snap Tite" Series with crimp sleeves and sealer.
- C. Valve Boxes-all automatic control valves shall be installed in suitable valve access box of proper size as required for easy access to the valve. Access boxes shall be complete with approved cover. Remote control valves shall be installed in Fogtite or Ametek plastic box, green in color.
- D. Backflow preventer shall be installed per Skagit P.U.D. requirements - call 424-7104.
- E. All other materials, not specifically described but required for complete and proper irrigation system installation, shall be new, first quality of their respective kinds, subject to the approval of the Owner.

PART 3 - EXECUTION

3.01 GENERAL

All materials and equipment shall be installed in a neat and workman-like manner. The Owner reserves the right to direct the removal and

replacement of any items, which in his opinion shall not present an orderly and reasonably neat or workman-like appearance, provided such item can be properly installed in such orderly way by the usual methods in such work. Such removal and replacement shall be done, when directed in writing, at the contractor's expense without additional cost to the Owner.

3.02 SURFACE CONDITIONS

A. Inspection

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Verify that irrigation systems may be installed in strict accordance with all pertinent codes and regulations, the original design, the referenced standards, and manufacturer's recommendations.

B. Discrepancies

1. In the event of discrepancy, immediately notify the Owner.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.03 FIELD MEASUREMENTS

- A. The Contractor will stake out the location of each run of pipe and all sprinkler heads or sprinkler valve locations prior to ditching. Before installation is started in any given area, the Owner shall check all locations and give his approval. Any changes made by the Owner after approval and installation, shall be at the Owner's expense.
- B. Where piping on the drawings is shown under paved areas but running parallel and adjacent to planted areas or turf areas the intent of the drawings is to install the piping in the planted or turf areas.

3.04 TRENCHING

- A. Perform all trenching necessary for this portion of the Work, strictly conforming to the requirements for trenching described in Section 02200 of these Specifications, except where noted herein.
- B. The Contractor shall notify the Owner of his intention to begin work at least two (2) working days in advance in order to schedule inspections and tests as required. Coordination shall be maintained with other subcontractors on the site to avoid conflict and unnecessary damage.

3.05 INSTALLATION OF PIPING

A. Piping Depth

Install all piping with at least the following depth:

Supply lines: 24 inches of cover minimum.

Lateral lines: 18 inches of cover minimum.

B. Under New Paving

1. Provide pipe sleeves under all new paving as indicated on the Drawings prior to the construction of new paving.
2. Install pipe sleeve in a straight line at the required depth of pipe it is protecting with a minimum of 18 inches cover.
3. Mark and cap ends of installed pipe sleeves in field with stake to aid in location of sleeve after paving operations are completed.

C. Inspection of Pipe and Fittings

Carefully inspect all pipe and fittings before installation, removing all dirt, scale, and burrs and reaming as required; install all pipe with all markings up for visual inspection and verification.

D. Plastic Pipes

1. Exercise care in handling, loading, unloading, and storing plastic pipe and fittings: store plastic pipe and fittings under cover until ready to install; transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.
2. Plastic pipe shall be cut with a hand saw or hack saw with the assistance of a square in sawing vice, or in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.
3. Repair all dented and damaged pipe by cutting out the dented or damaged section and rejoining with a coupling.
4. In jointing, use only the specified solvent and make all joints in strict accordance with the manufacturer's recommended methods; give solvent welds at least 15 minutes set-up time before moving or handling and 10 hours curing time before filling with water.
5. Centerload all plastic pipe with a small amount of backfill to prevent arching and whipping under pressure.

6. For all changes in depth of pipe as at the transition of AC pipe to plastic pipe 45 degrees fitting shall be used.
7. Backfilling shall be done when pipe is not in an expanded condition due to heat or pressure. Cooling of the pipe can be accomplished by operating the system for a short time before backfill, or by backfilling in the early part of the morning before the heat of the day.
8. Before pressure testing, soluble weld joints shall be given at least 24 hours curing time.
9. All plastic to metal joints shall be made with plastic male adaptors.
10. Great care must be taken to insure that the inside of the pipe is absolutely clean. Any pipe ends not being worked on must be protected and not left open.

F. Thrust Blocks

All pipe, fittings, and valves, etc., shall be carefully placed in the trenches with concrete thrust blocks to be poured at all fittings and valves, where required by Owner. In general, thrust blocks will be required when using mechanical joint pipe (i.e. gasketed joint pipe).

G. Galvanized Pipe and Fittings

1. Make all pipe threads sound, clean cut, and well fitting.
2. Use pipe dope on male fittings only.
3. Make all screwed joints tight with all necessary wrenches but without handle extensions.
4. All galvanized pipe, including risers and hose connections, shall be painted with at least one (1) coat of "Carbon Elastic Paint" to prevent acid corrosion. Do not add any solvent to the paint. If the paint is too thick, heat without applying to direct flame. Care must be taken to thoroughly paint all male threads. When painting is done before assembly, the paint should be touched up after assembly.

3.06 RISERS

- A. All risers must be constructed according to the swing joint riser assembly detail. The galvanized pipe risers must have the same inlet size as the sprinkler heads.

- B. All threaded joints are to have pipe dope applied to male threads only.
- C. Risers are to be capped after installation in preparation for pressure testing.
- D. Care must be taken to not overtighten the steel pipe into the PVC fitting at the sprinkler line-riser connection.

3.07 ELECTRICAL SUPPLY CONDUIT

A. General

- 1. Install new conduit for 120/240V service from electric meter provided and installed by others to controller.
- 2. Field conditions may require additional conduit bends, connections or fittings. These shall be included in the scope of work and shall be provided without additional cost to the Owner.
- 3. Any and all conduits which must be installed before an area is backfilled or concrete is poured shall be installed promptly to avoid delaying the construction schedule.

B. Installation

- 1. Install conduits with minimum number of joints. Runs shall be straight. Elbows and offsets shall be uniform and symmetrical. Insofar as practicable, runs shall be located as shown diagrammatically on the drawings.
- 2. All conduit placed underground shall be buried a minimum of 18".
- 3. Connections: All hubs at outdoor junction boxes shall be watertight. All couplings and unions shall be made up mechanically strong and tight. All threaded joints shall be made water-tight using a compound recommended by the manufacturer, applied to the male thread only.

Any connection between conduit and box or cabinet not having a threaded hub shall be made with tapered, insulated metallic bushing.

Standard taper pipe threads shall be used in fittings with threaded hubs and the threaded pipe ends firmly made into the threaded fittings. Connections to flexible "Sealtite" conduit shall be made with Appleton ST series connectors or ST gasket assembly at entrance to steel.

- 4. Fittings: All conduit fittings shall be of the threaded Crouse-Hinds "Obround", with sheet metal covers unless otherwise specified on drawings. Stainless shall be furnished and used to attach the cover to fitting body.

5. Conduit bends: Factory made conduit bends and to the requirements of the NEC may be used.

Right angle turns shall be made with symmetrically arranged bends or with approved threaded fittings, unless otherwise shown on the drawings. Large radius field bend shall be made with an approved hickey or hydraulic bending machine, without flattening or distorting the conduit or damaging the interior and exterior protective coating. Conduit shall be bent cold; the use of heat for bending will not be permitted.

C. Grounding

The entire conduit system shall be electrically continuous and shall be grounded in accordance with the requirements of the National Electrical Code and local ordinances.

3.08 CONTROL WIRE

- A. Control wires are to be taped together at five foot intervals; then this bundle is to be taped to the bottom of the supply line at ten foot intervals with at least three wraps of electrical tape.
- B. Splices will be permitted only at the valves and never between valves or valve and controller. There must be a separate lead and "hot" wire to each automatic valve. One common wire will be acceptable.
- C. One (only) unconnected spare control wire is to be run between controller and all remote valves.
- D. Connections between the Automatic Controller and the remote control valves shall be made with 14/1-SC-UF-UL Control Wire, which shall be laid in the pipe trenches not less than 18" deep via the shortest route between them, and should be protected under, but not in contact with the pipe lines wherever possible.
- E. Control wiring shall be permanently labeled as to valve controlled, at valve and at controller location. A 12" expansion loop, in the wire, shall be left at the valve.

3.09 AUTOMATIC CONTROLLER

- A. Automatic controller shall be as specified on the Drawings.
- B. Verify location of automatic controller with Owner.
- C. Electrical wiring shall be installed according to local code. The cost of all electrical work necessary to make the automatic equipment operate

properly shall be included in this Contract. All controller wiring shall be installed in rigid conduit.

- D. A diagram or schedule shall be posted in the controller to facilitate the selection of the valves to be operated.

3.10 AUTOMATIC VALVES

- A. Install as shown on automatic valve assembly detail.
- B. Before installation of any automatic valves, the supply line must be thoroughly flushed.
- C. All automatic valves shall be enclosed in valve boxes set 4" to 6" below finish grade. Valve box extensions may be required.

3.11 IRRIGATION HEADS

A. General

- 1. All sprinkler heads and quick-coupling valves shall be set perpendicular to finished grades unless otherwise designated on the Drawings, or otherwise specified.
- 2. All nozzles on stationary pop-up sprinklers or stationary spray heads shall be tightened after installation.
- 3. Adjusting screw, adjusting stem of adjusting friction collars shall be adjusted on a lateral line or circuit as required for the proper arc of coverage, radius, diameter and/or gallonage discharge.

B. Lawn Sprinkler Heads

- 1. Install lawn sprinkler heads where indicated on the Drawings and in strict accordance with the manufacturer's recommendations.
- 2. Lawn sprinkler heads shall be installed in the locations shown on the Drawings with nipples 3" above finished grade except where shown along walks and driveways with finished grade established. Set heads flush with the surface of the pavement at the time of installation and 1 1/2 inches from pavement.
- 3. When the turf is sufficiently established to allow walking on it without appreciable destruction, reset all the lawn sprinkler heads flush with grade and firmly anchored with the soil.

3.12 TESTING AND INSPECTION

- A. Closing in Uninspected Work. Do not allow or cause any of the work of this Section to be covered up or enclosed until it has been inspected, tested, and approved by the Owner.
- B. Flushing
 - 1. Before backfilling and installation of automatic valves, the main line shall be completely flushed and tested.
 - 2. Similarly, each section of lateral lines with risers installed and capped and before sprinkler heads are attached shall be completely flushed and tested.
- C. Testing
 - 1. Contractor shall give 24-hour notice to Owner each time an inspection is required.
 - 2. Furnish all necessary testing equipment and personnel.
 - 3. Make all necessary provisions for thoroughly bleeding the lines of air and debris.
 - 4. Before testing fill the line with water for a period of at least 24 hours.
 - 5. All PVC main and lateral lines shall be tested with minimum, static water pressures of 150 p.s.i. for 30 minutes without introduction of additional service or pumping pressure. Testing shall be done with one pressure gauge installed on the line, where directed by the Owner.

Lines which show loss of pressure exceeding 5 p.s.i. at the ends of specified test periods shall be rejected.
 - 6. To be valid, all tests must be performed under the direction and supervision of the Owner and/or his representative.
 - 7. Any leakage in the lines being tested shall be corrected and the test repeated until the system is airtight.
- D. Bedding and Backfilling
 - 1. This portion of the Work shall be performed in strict accordance with the requirements for backfilling described in Section 02200 and specified herein.
 - 2. Bedding material shall be placed under the pipe and along the sides to the depths shown on the drawings.

Electrical conduits and irrigation sleeves will not require bedding material.

3. Before backfilling, all underground parts including drainage pipe, irrigation risers, valves, drain valves, etc., must remain exposed so that they can be located "as built" by the Contractor. It is suggested that the Contractor partially backfill the pipe as it is laid, leaving all joints exposed; then complete backfilling later after flushing, pressure testing, inspections and "as built" location.
4. Backfilling shall be carefully done in such a manner as not to disturb or damage the installation. Not until pipe joints have set, piping has been tested, and the installation has been inspected and approved, shall trenches be backfilled. Backfill shall start as soon as possible after approval to avoid damage to finished work. Damaged work shall be replaced and retested before backfilling is continued.
5. Bedding or backfill material shall be carried up evenly on both sides of the pipe simultaneously in approximately 6-inch layers and thoroughly compacted to 6 inches above the crown of the pipe without disturbing the line or grade of the pipe.
6. Backfill material from 6 inches above the top of the pipe to grade shall be carried up in even layers not to exceed 12 inches in loose thickness, except layers in the top 2 feet shall not exceed 6 inches in loose thickness. Each layer shall be thoroughly compacted to minimum 90% compaction. No settling of back fill shall be apparent upon final guarantee.
7. The backfill material above the bedding material to grade shall normally be the excavated material. Where this excavated material is unsuitable for recompaction, the Contractor shall use suitable on-site material for backfill of the trench and shall place the unsuitable material as specified in 02200 Earthwork.
8. The location, inspection and testing provisions of these Specifications will be strictly adhered to. If for any reason any part of the sprinkler system is backfilled before approved location, testing or inspections is authorized by the Owner, it will be completely uncovered and exposed until approved for backfilling by the Owner or his representative.
9. All roots, rocks, and surplus excavation shall be removed from the site unless otherwise directed.

E. Final Inspection

Before the sprinkler system will be accepted, the Contractor, in the presence of the Owner, shall perform a water coverage test to determine

if the water coverage and operation of the system is complete and satisfactory. If any part of the system is inadequate due to the Contractor's poor workmanship or materials, it shall be repaired or replaced at the Contractor's expense and the test repeated until accepted.

3.13 INSTRUCTIONS

A. Remote Control Legend

Attach a typewritten legend inside the controller door stating the areas covered by each remote control valve.

B. Maintenance Personnel

After the system has been completed, inspected, and approved, instruct the Owner's maintenance personnel in the operation and maintenance of the irrigation system.

C. Operations and Maintenance Manuals - Provide three (3) complete copies of Manufacturer's recommended instructions for installation, operation, maintenance, and repair of all automatic valves, manual valves, backflow preventers, irrigation heads and automatic controller.

3.14 WINTERIZING SYSTEM

Contractor shall winterize irrigation system once and turn on system in following spring to assure proper operation. Any freeze or settling damage shall be repaired at Contractor's expense. System shall be winterized by the following method:

1. Close gate valve in irrigation main line located near backflow preventer.
2. Insert quick coupling quill, connected to air compressor, into quick coupling valve.
3. Following start of air compressor, program irrigation controller through three (3) complete cycles or until all water has been forced out of system.
4. Insert quick coupling quill into coupling valve at dead end runs to main line to force out all remaining trapped water.
5. Remove compressor, leaving gate valve to irrigation system closed.

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IRRIGATION SYSTEM
02750 Page 15

3.15 GUARANTEE

1. The entire sprinkler system shall be guaranteed by the Contractor to give complete and satisfactory service as to material and workmanship for a period of one (1) year from the date of final acceptance of the work by the Owner. Five percent (5%) of the Contract cost of the sprinkler system shall be retained for one (1) year to insure compliance with the guarantee.
2. Any settling of backfilled trenches shall be repaired by the Contractor at his expense, including restoration of seeded or sodded area.

END, SECTION 02750

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CONCRETE FORMWORK
03100 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Formwork for all cast-in-place concrete.

B. Related Work Described Elsewhere

02200 Earthwork
03200 Concrete Reinforcement
03300 Cast-in-place

1.02 QUALITY ASSURANCE

A. Responsibility

Design, construction and maintenance of formwork is the Contractor's responsibility.

B. Comply with American Concrete Institute ACI 347, "Recommended Practice for concrete formwork".

1.03 SUBMITTALS

A. General

Comply with pertinent provisions of Section 01340

B. Manufacturer's Data

Within 30 calendar days after award of the Contract, submit manufacturer's data and installation instructions for proprietary materials including form coatings, ties and accessories, and manufactured form systems if used.

PART 2 - PRODUCTS

2.01 FORM MATERIALS

A. Forms

1. Construct formwork for exposed concrete surfaces with smooth faced overlay plywood, Simpson "Multi-Pour", or other panel type materials acceptable to the Owner, to provide continuous, straight, smooth as-cast surfaces. Furnish in largest practicable sizes to minimize number of joints.

2. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without excessive and objectionable bow or deflection. Minimum plywood form thickness of 1/2".

B. Lumber for Forms

Framing, studding and bracing to be "standard" or "construction" grade Douglas fir, rough or S4S.

C. Form Ties

1. Provide factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
2. Provide ties so that portion remaining within concrete after removal of exterior parts is not greater than 1" from the outer concrete surface. Provide form ties which will not leave a hole larger than 1" diameter in the concrete surface.
3. Approved manufacturer's are Richmond, Dayton or Burke or equal.

D. Forms Coatings

Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds, nor raise grain of formwork.

E. Embedded Items

Threaded rods, bolts, weeps, etc. as required and approved.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. General

1. Conform to shapes and dimensions shown, and within specified allowable tolerances. Construct accurately; brace to be unyielding. Set form board and plywood for walls horizontally. Provide openings required for other trades.
2. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required to prevent leakage and fins.

3.02 FORM CONSTRUCTION

A. Fabrication

Fabricate forms for easy removal without hammering or prying against concrete surfaces. Form intersecting planes to provide true, clean cut corners.

B. Maximum Spacing

Studs and joists not farther apart than 12 inches o.c. Horizontal form walers spaced not to exceed 2.0' o.c.

C. Plywood Forms

Use for all exposed concrete. May be used for other unexposed concrete at Contractor's option. Make joints flush, in regular pattern, as possible. Use full-size sheets insofar as possible in exposed work.

D. Re-use of Plywood

Plywood forms may be reused provided all damaged edges are removed, all imperfections in faces are repaired and all holes filled and plywood is cleaned to obtain concrete surfaces equal to that obtained by new plywood.

E. Allowable Tolerances

Construct all formwork to conform to the dimensional tolerance in finished concrete work specified herein and specified in Cast-in-place Concrete, Section 03300.

3.03 FORM COATINGS

Coat form contact surfaces with form-coating compound before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces which will be bonded to fresh concrete. Apply in compliance with manufacturer's instructions.

3.04 INSTALLATION OF EMBEDDED ITEMS

Set and build into the work, embedded items required for other work that is attached to or supported by cast-in-place concrete. Set according to Drawings, instructions or direction from suppliers or Owner.

3.05 REMOVAL OF FORMS

A. Ties

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CONCRETE FORMWORK
03100 Page 4

3.05 REMOVAL OF FORMS

A. Ties

Remove 4 days after pour unless directed otherwise. Fill holes with dry pack cement mortar unless directed otherwise.

B. Forms

Remove forms at a time and in such manner to ensure complete safety of structure and without damage to concrete surfaces. Remove forms after structure has sufficient strength to safely support its own weight and any loads that may be imposed on it.

END, SECTION 03100

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CONCRETE REINFORCEMENT
03200 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Steel reinforcement of cast-in-place concrete.

B. Related Work Described Elsewhere

03100 Concrete Formwork
03300 Cast-in-Place Concrete

1.02 QUALITY ASSURANCE

Comply with pertinent provisions of the following standards:

- A. Concrete Reinforcing Steel Institute (CRSI)
"Manual of Practice for Reinforced Concrete Construction", latest edition.
- B. American Concrete Institute (ACI) 318
"Standard Building Code Requirements for Reinforced Concrete."
- C. American Society for Testing & Materials (ASTM)
 - 1. A185 Specification for Welded Steel Wire Fabric for Concrete Reinforcement
 - 2. A615 Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

1.03 SUBMITTALS

A. Shop Drawings

Furnish reinforcing steel bending and placing diagrams prepared by or under supervision of a qualified steel detail approved by Owner within 35 calendar days after award of Contract.

PART 2 - PRODUCTS

2.01 REINFORCING STEEL

A. Reinforcing Bars

All steel shall conform to ASTM A615 Grade 60. Unpainted, uncoated, free from rust, dirt or loose scale.

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CONCRETE REINFORCEMENT
03200 Page 2

from rust, dirt or loose scale.

2.02 ACCESSORIES

A. Tie Wire

16 - 18 gauge or heavier, black annealed wire.

B. Spacer Bars for Wall Reinforcing

#3 bars "U" shape.

C. Miscellaneous

Other devices necessary for proper placing, spacing, supporting and fastening steel reinforcement in place conforming to CRSI "Manual of Practice".

2.03 FABRICATION

Clean, bend, splice reinforcement in accordance with CRSI "Manual of Practice".

PART 3 - EXECUTION

3.01 INSPECTION

Examine the substrate, formwork, and the conditions under which concrete reinforcement is to be placed, and correct conditions which would prevent proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Comply with specified standards for details and methods of reinforcement placement and supports, and as herein specified.
- B. Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.
- C. Position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations.
- D. Place reinforcement to obtain the minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends

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CONCRETE REINFORCEMENT
03200 Page 3

are directed away from exposed concrete surfaces.

E. Splices

Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying.

3.03 CONSTRUCTION OBSERVATION

Notify the Owner at least 24 hours ahead of each concrete pour, and place no concrete until all reinforcing steel has been installed by the Contractor and approved by the Owner.

END, SECTION 03200

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CAST IN PLACE CONCRETE
03300 Page 1

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Cast-in-place concrete stairs, cast-in-place concrete cheek walls

B. Related Work Described Elsewhere

03100 Concrete Formwork
03200 Concrete Reinforcement

1.02 QUALITY ASSURANCE

A. Standards

Conform to the following standard specifications as supplemented and modified hereinafter:

1. American Concrete Institute (ACI):
ACI 318 "Building Code Requirements for Reinforced Concrete"
ACI 301 "Specifications for Structural Concrete for Buildings"
ACI 304 "Recommended Practice for Measuring, Mixing, Transporting
and Placing"
ACI 308 "Recommended Practice for Curing Concrete"
2. American Society of Testing and Materials (ASTM)
ASTM C 143 "Slump for Portland Cement Concrete"
ASTM C 150 "Portland Cement"
ASTM C 33 "Concrete Aggregates"
ASTM C 260 "Air Entraining Admixture for Concrete"
ASTM C 94 "Ready Mix Concrete"
ASTM C 307 "Carbon Steel Externally and Internally Threaded Standard
Fasteners"
ASTM A 153 "Zinc Coating (Hot Dip) on Iron and Steel Hardware"
ASTM C 40 "Test for Organic Impurities in Sands for Concrete"
3. In case of conflict between the referenced standards, the more
stringent requirements shall govern.

B. Qualifications of Installers

1. Throughout the progress of installation of the work of this Section,
provide at least one person who shall be thoroughly familiar with
the specified requirements, completely trained and experienced in
the necessary skills, and who shall be present at the site and shall
direct all work performed under this Section.
2. In actual installation of the work of this Section, use adequate

numbers of skilled workmen to ensure installation in strict accordance with the approved design.

3. In acceptance or rejection of work performed under this Section, the Owner will make no allowance for lack of skill on the part of workmen.

C. Quality Control

Mix design is the responsibility of the Contractor. The design of such mixes to be based on test results, experience, the ultimate strength of the concrete assumed in the design, and to take into consideration the workability of the mix and the durability of the concrete.

1.03 INSPECTION AND TESTING

A. Inspection

Notify Owner at least 48 hours prior to placement of concrete.
Inspection will be performed for conformance with the following:

1. Formwork

Inspection shall be performed for conformance with approved drawings, for design and seal of form joints, and for type and location of form ties.

2. Reinforcing Steel and Embedded Items

Inspection shall be performed to verify proper placement of reinforcing bars, fabric, and embedded items prior to placement of concrete; check condition of surfaces of reinforcing and embedded items for bond integrity with concrete; verify placement location, sizes and anchorages of all embedded items.

B. Testing

At the Owner's option testing of concrete work may be required. Contractor shall cooperate with Owner's selected testing laboratory and others responsible for testing and/or inspection. Testing may include but not be limited to:

1. concrete strength
2. design mix
3. slump test

1.04 SUBMITTALS

A. General

Comply with provisions of Section 01340.

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B. Samples

Submit samples of

1. Form ties and spreaders
2. Expansion joint filler
3. Expansion joint sealer

PART 2 - PRODUCTS

2.01 CEMENT

Portland cement conforming to requirements of ASTM C 150, Type II, Use same brand of cement for all work.

2.02 AGGREGATES

Aggregates conforming to requirements of ASTM C 33. Maximum aggregate size shall be 3/4".

2.03 WATER

Water shall be clean, potable and free from injurious foreign matter.

2.04 CONCRETE ADMIXTURES

A. Air Entraining Admixture

ASTM C 260

2.05 BONDING AGENT

For bonding new concrete to old or at construction joints, bond agent shall be "weld-crete" as manufactured by Larsen Products, "Duraweld C" as manufactured by W.R. Grace, or approved equal.

2.06 CONCRETE MIXING

A. General

Ready-mixed concrete per ASTM C 94. Contractor is responsible for quality of concrete.

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B. Proportioning

As per ACI 304. Minimum 5 1/2 sacks of cement per cubic yard of concrete.

C. Water Content

As little as practicable for the specific conditions. Maximum 4" slump. Maximum 6 gallons water per sack of cement.

D. Admixtures

Admixtures other than air-entraining agents admixture as specified shall not be used except as approved by Owner. Air entraining admixtures shall conform to ASTM C 260.

E. Air-Entrained Concrete

All concrete shall be air-entrained to contain 5% of entrained air +/- 1/2%.

2.07 CONCRETE STRENGTH

Compressive strength at 28 days to be minimum 3000 psi.

2.08 EXPANSION JOINTS

A. Joint Filler

Joint filler shall be pre-formed, non-extruding material as approved by Owner.

B. Joint Sealer

Joint sealer shall be self-leveling polyurethane, as approved by Owner. Color to match concrete.

2.09 CONCRETE ACCESSORIES AND MISCELLANEOUS HARDWARE

A. Accessories

All structural steel shapes, plates and bars shall be ASTM A36. All bolts, washers, studs, and other fastenings shall be ASTM A307. All steel shall be clean and free from loose mill scale, face rust, and pitting. All metal surfaces exposed to air or water including all steel shapes, plate, bars, rods, bolts, washers and other hardware shall be galvanized in accordance with ASTM A153 and ASTM A123.

PART 3 - EXECUTION

3.01 GENERAL

The method of depositing and compacting concrete shall be conducted so as to form a compact, dense and impervious concrete which will show smooth faces on exposed surfaces.

3.02 CONVEYING AND PLACING CONCRETE

- A. Pour monolithically insofar as practicable. Adjust mix only on approval by Owner. Deposit concrete as close to final position as practicable. Vibrate as necessary to obtain thorough compaction, embedment of reinforcing and complete filling of forms. Minimize segregation of mix.

B. Protection

1. Cold weather placing

Do not place concrete during rain, sleet or snow unless adequate protection is provided and approval is obtained. Do not allow rain water to increase the mixing water or to damage the surface finish. When the mean daily temperature falls below 40 degrees F, the minimum temperature of concrete as placed shall be 50 degrees F.

2. Hot weather placing

Concrete as deposited in hot-weather shall have a placing temperature less than 80 degrees F.

Protect fresh concrete from direct rays of sun or drying effect of wind.

3.03 JOINTS

A. Construction Joints

1. Horizontal construction joints will not be permitted.
2. Provide keyways at least 1/2 inches deep in all construction joints in walls, and at junction of footings and walls.
3. Place construction joints perpendicular to the main reinforcement. Continue all reinforcement across construction joints.

B. Expansion Joints

Do not extend reinforcing through.

3.04 EMBEDDED ITEMS

Place all anchors, rods and other embedded items prior to placing concrete.

3.05 CONCRETE FINISHING

A. Concrete stair finishes

1. Troweling: After floating, trowel by hand to hard dense surfaces free from troweled marks. Do not absorb wet spots with neat cement or mixture of sand and cement. Wait until surfaces are dry enough for proper troweling.
2. Non-slip brush finish: All steps to be brushed finish with tooled edges unless otherwise specified.
 - a. Immediately after trowel finish, slightly roughen the concrete surface by brooming in direction parallel to tread. Use a fiberbristle broom.

B. Concrete Wall Finish:

1. Exposed surfaces: All lips, fins and other projections exceeding 1/4 inch in height shall be removed with sharp tool or stone.
2. The initial pour shall be accomplished so that upon removal of the forms, no filling, patching or sacking shall be required to obtain a smooth void-free surface to the shapes drawn. Verify field method, forms, and layout with the Owner. Secure Owner's approval prior to pouring concrete.
3. Troweling: Provide smooth trowel finish per paragraph 3.06 A.2 above. No sacking.
4. Related unformed surfaces: At tops of walls, horizontal offsets and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a smooth trowel finish and chamfer as shown.

3.07 PROTECTION AND CURING

A. General

Protect freshly deposited concrete from premature drying and excessively hot or cold temperatures, and maintain without drying at a relatively constant temperature for the period of time necessary for the hydration

of the cement and proper hardening of the concrete. Keep all surfaces of concrete moist for not less than seven (7) days.

B. Initial Curing

Initial curing shall immediately follow the finishing operation. Concrete to be kept continuously moist at least overnight. One of the following materials or methods shall be used.

1. Ponding or continuous sprinkling.
2. Absorptive mat or fabric kept continuous wet.
3. Sand or other covering kept continuously wet.
4. Curing compounds conforming to "Specifications for Liquid Membrane-Forming Compounds for Curing Concrete" ASTM C309. Such compounds to be applied in accordance with the recommendations of the manufacturer.

C. Final Curing

Immediately following the initial curing and before the concrete has dried, additional curing shall be accomplished by one of the following materials or methods:

1. Continuing the method used in initial curing.
2. Other moisture-retaining coverings as approved by the Owner.

D. Duration of Curing

Continue final curing until the cumulative number of days or fractions thereof, not necessarily consecutive, during which temperature of the air in contact with the concrete is below 50 degrees F has totaled seven days. Rapid drying at the end of the curing period shall be prevented.

E. Formed Surfaces

Forms in contact with the concrete during the final curing period shall be kept wet. If forms are to be removed during the curing period, employ immediately one of the above curing materials or methods. Continue for the remainder of the curing period.

F. Protection from Mechanical Injury

During the curing period, protect the concrete from damaging mechanical disturbances, particularly load stresses, heavy shock, and excessive vibration. All finished concrete surfaces to be protected from damage caused by construction equipment, materials, or methods, and by rain or running water. Self-supporting structures shall not be loaded in such a

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way as to overstress the concrete.

3.08 DEFECTIVE WORK

Any concrete which is not formed as shown on the Plans, or for any reason is out of alignment or level or shows a defective surface, shall be considered as not conforming with the intent of these specifications and shall be removed from the job by the Contractor at his expense. Permission to patch any such area shall not be considered a waiver of the Owner's right to require complete removal of the defective work if the patching does not, in his opinion, satisfactorily restore the quality and appearance of the surface.

3.09 ALLOWABLE TOLERANCES

Construct all formwork to conform to the dimensional tolerance in finished concrete work.

1. Variation from the plumb in the line and surfaces of walls, 1/4 inch per 10 ft.
2. Variation from the level or from the grades indicated on the drawings: 1/4 inch per 10 ft.
3. Variation in the thickness of slabs and walls, minus -1/4 in., plus - 1/2 in.

END, SECTION 03300

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PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

Parking lot lighting

B. Related Work

01500 TEMPORARY FACILITIES AND CONTROLS
02200 EARTHWORK

1.02 QUALITY ASSURANCE

A. Qualification of Contractor

All electrical work must be performed by an electrician licensed in the State of Washington.

B. Standards

1. All electrical work shall conform to the standards of the National Electrical Manufacturers Association (NEMA).
2. The "Standard Specification for Municipal Public Works Construction", published by the Washington State Chapter, American Public Works Association (APWA), latest edition, shall apply unless modified herein.

C. Codes and Regulations

The Contractor shall keep himself fully informed and shall comply with all existing laws, codes, ordinances, and regulations which in any way affect the conduct of the work. The Contractor shall secure at his own expense all necessary permits for construction.

PART 2 - PRODUCTS

2.01 LUMINARIES

Luminaries shall be Model 98825 (9364) with 100 W-E17 HPS lamp as manufactured by:

BEGA/FS
Box 50442
Santa Barbara, CA 93150
(805) 684-0533

or equal approved by the Owner.

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2.02 POLE

Pole shall be Model 1908, 20 foot high, black tapered, round, as manufactured by BEGA/FS, or equal approved by the Owner.

2.03 CONDUCTORS, CABLE AND MISCELLANEOUS ELECTRICAL MATERIALS

Shall conform to APWA specifications.

PART 3 - EXECUTION

3.01 INSTALLATION OF POLE SUPPORTED LUMINARIES

- A. Install pole supported luminaries at locations shown on the plans, per APWA Specifications. Contractor shall determine size and depth of pole footing required to support pole and luminaire against all anticipated loads. Owner shall approve appearance of footing at grade and connection to pole. Connection shall be made according to manufacturer's instructions.

END, SECTION 16500

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